The Builder.

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Art, not Style.

ALTHOUGH, according to Sir Charles Wood, it may be some time before the vexed subject of style for the new public offices is settled (the Indian department removing to the Victoria Hotel in June), it seems not improbable, that before many weeks have expired, the question will be again mooted in Parliament, what shall be the character of the building which must be erected for the Foreign Office. Regret how we may, that questions of art should find us continually unprepared for solution of them,—and, as in this case, in danger of a course that might, before the completion of the building, be regretted,—there will be no means of longer staving off the decision in the case, unless the wants of at least one most important department of Government are to remain provided for in a manner which, if the public have been rightly informed, entails serious inconvenience and loss, national discredit, and expense which is in many points of view needless, and is without justification as a constant recurrence. Wanting a building, therefore, the question is, whether the work is to be consigned to some speculative builder who, we will suppose, would house the department according to instructions from the Under-Secretary, but adding some of those so-called *decorative* features which, through similar agency, have formed and faced London and its suburbs with too much of ugliness; or whether the occasion is to be used, as every such occasion should, to constitute building also architecture, to thereby answer to what is an ever-felt and natural desire, the love of beauty and of art,—one which it approaches to criminality at any time to balk or allow to go unanswered,—and to perfect a work which, being that of the nation, shall be consistent with the national attainments in this present age, and up to the mark of those in particular, existing somewhere, as proved in the professional writing of the day, and by the delineative skill of architects; by the knowledge that there is, at all events of certain examples; and which attainments were made manifest in the competition for the Government Offices, — as admitted; though it be not understood generally, how much the management of that competition made it an inadequate test. As straws that show which ways rising are the winds, we have before us a pamphlet and a book, that are as much conflicting as Auster and Boreas, whensoever they meet.* The blasts in this particular instance are different in quantity: by any test of mental impact, however, the impelling force, or logic, is not directly in proportion to the matter, or to the volume.

Considering that the question of foundation of style for the new building, is one on which much affecting a right decision may yet be said, it has been regretted that the question cannot be deferred for a year, or rather more, when there might be greater unanimity in the profession itself, if not amongst those who affect an interest in architectural art. We do not participate in the detraction of the merits of the Palace at Westminster; yet we think it possible that had the style or character for that building to be considered now, "instructions" very different would be issued to those of the competition in that case, which have brought into realization a work which is unsatisfactory to Gothicists, and which may not be equal to what its architect could have produced. As our readers are aware, however, we by no means hold, as to the Westminster Palace, that the building deserves the censure which it is just now the fashion to inflict upon it by a few amateurs of the Mediæval way of thinking: its site may be bad; its architect may have erred in the amount of ornament which he has given to the principal parts, or in the grouping of the building as a whole,—though here we should do right to take into account how far his judgment was subjected to distracting influences, as in the ventilation and other matters which have influenced the outline of the mass, including the towers; but the building, especially in its interior, has qualities of art that every considerable work of architecture should possess, and which seem by many of those who enter into the present discussion, to be held secondary in importance to the observance of a particular character of detail. Whatever it may be as Mediæval or Gothic, the Palace at Westminster has features which are in every sense work of the art, and qualities which we should be glad to see recognized by some of those who are just now writing or talking about style. With such perception general, the selection for the Foreign Office of either groundwork, as compared with the other, would be of little moment; as, either way, the course taken by architects would soon merge into that best for future progress and future art. The question, however which, wanting the Office, we have to decide, is, how shall we, whilst the perception is lacking, best bridge over the interval between the present need, and the end, the higher character of all our future architecture? and, seeing there is no step, unless from the building of huts, to be taken without utilization of some previous gain or formation, shall we begin on this groundwork, or that other?

The advocates of a Mediæval basis contend that "Italian" architecture is not English national, and that this is shown by the name, and that it was only a revival of what they call Pagan art; that it has never existed in this country but as an exotic, and is not suited to the climate; whilst Gothic architecture had its best development with us, and is associated with the recollection of Magna Charta, with some of the most interesting passages in our history, and with an age of faith and good deeds to which our money-getting propensities are in disadvantageous contrast; that if the Italian architecture be in possession of the field, it is worn out, and capable of no further expression, since it is bound by rules such as fetter the exercise of genius, whilst it is at variance with the complete attainment and expression of use in a building. Reject, therefore, they say, what is bad; go back and start again from the basis of a time when there existed what we regard as the best English architecture,—taking advantage of, however, and introducing all improvements that have been made since. The advocates of the existing basis which we call Classical would say, there is no style of architecture national by origin, more than there was, according to De Foe, the "true-born Englishman;" that styles of the principal countries of Europe started from Italy, and were then made by these countries their own,—somewhat as every style of architecture, unless the earliest, has had its precedent; that the question can only be between what is of the Teutonic family of nations, and what is European or universal; that the "Revival" did not exist in fact, except in the general sense of revival of letters; as according to Michelet, it was more than the return to antique examples and to the forgotten forms of nature; and, whilst new liberty was given to the architect and painter, and a fresh development of art took place, it included the greatest of poets, jurists, and philosophers, —or if otherwise admitted of architecture at the commencement, that is to say, leaving out of consideration that the course in Italy, in some instances, had never been interrupted, the obloquy of such going back would be more fittingly applied to that reproduction of Mediævalism which, if now repudiated by the more enlightened men of the present school, was the commencement of their career, and still characterizes their practice in church building,—that the term Christian art might better be confined to styles which are even of marked Roman origin, than to the Gothic styles which appear to have originated partly from, and in great part resemble, the Mahommedan; that the high-pitched roof is found in Italy in the Gothic, and in France and England in the Italian styles; that the pitch of roofs is governed as much by the material of the covering as anything else; and that there could have been no structural argument for a high pitch, involving great exposure to wind, where the covering was lead, and where there were parapets to retain the snow instead of preventing its lodgment; that the national greatness is rather to be dated from the time of Elizabeth, or the liberty from that of William III., than from the Middle Ages; and that in literature much is owing to Italy; that there is as much to recoil from as to admire in the annals of the Middle Ages, and more to be proud of than the reverse, in our present position; that the occupation of the field, by regular transmission, is a fact not to be altered or got over, since it is impossible to go back, unless by ignorance; that rules, "fetters only to men of *no* genius," are needed to save us from that which is novel, but is nothing more; that symmetry is essential in a work of art, is accordant with the lesson of nature, and in plan of a building furthers even the use; and, in fine, that the low condition to which a style has been brought by ignorance or pedantry, is not a reason for saying it is worn out, but should be rather an inducement to turn to it and correct it through the study of other styles, and to add to it and invigorate it; thus bringing forth eventually new art by the line of action on which such art has been produced ever.

There is considerable difficulty, however, in setting forth the points of the controversy, because they are shifted from time to time, and we cannot exactly mark where issue is to be joined. Each army of disputants is divisible into two forces; and on the Mediæval side it is hard to say whether most the Gothic revivalist embarrasses the progressionist, or whether the latter has convenient and imposing support from the appearance of the other at his heels. The author of the pamphlet asserts, with some reason, that this last is the case. He remarks that the Gothic style, properly so called, is already condemned even by its friends, as alike unsuited to the proposed building and the present age, being in idea associated only with the feudal system, with "the turbulence, ignorance, and cruelty" of the Middle Ages, the serfdom of the people, with faith which was but superstition, the dissoluteness of the clergy, and the reverse of all, of chivalry or religion, that is attributed to those times. The real question, therefore, he says, lies "not between Classic and true Gothic, but between Classic and a new imitation of Gothic," which, by confession of its advocates, is an infant groping its way,—

"... a state of the question which somewhat embarrasses the inquirer, and offers considerable advantages to the supporters of the new Gothic, by enlisting in its favour, under its name of Gothic, the admirers of that style, with a delusive promise of reviving it; eluding objections to Gothic, by saying that the new style is not Gothic; and dexterously meeting criticisms on the violation of Gothic proprieties, by alleging that the nineteenth century Gothic is exempted

* "Remarks on a National Style in Reference to the Proposed Foreign Office." 8vo., pp. 48; Bell & Daldy.

"Pagan or Christian? or, Notes for the General Public on our National Architecture," by W. J. Cockburn Muir. 8vo., pp. xii., 280; Bentley.

from observing them, or that such and such details are not essential to the new style.

'Quo teneam vultus mutantem Protea nodo?'

It is Gothic for some purposes, and not Gothic for others, according as it suits the turn."

Though "the *real* Gothic" is thus, he says, not directly in question, the qualities and associations claimed for it afford the countenance to the infant Gothic which, deprived of that countenance, would be "a helpless bantling," and "would speedily perish by sheer neglect. It is, therefore, quite necessary and right to consider the claims of the real Gothic, for these are, in fact, the only claims of the mock Gothic," &c. The aim of the pamphlet, therefore, is to show that an assertion that Gothic architecture "'is emphatically and preeminently the national architecture of England,'" is, in the ordinary sense of the words, "manifestly untrue," and that "any prejudice in favour of a style, arising from the fact of its being our national style, ought to be entirely on the side of the already domesticated Revived Italian, or some modification of it." He speaks of the change in sentiment, modes of thought, manners, tastes, and habits, wrought in the interval between this century and the thirteenth, and following the writer of a letter in the *Times* (November 1st, 1859), signed "A," says that the argument of nationality is worthless, through the fact that the style was the product also of other nations, and very different to our own; and therefore it had origin in circumstances common to all, namely, the Feudal organization,—a position which Mr. Scott, in one of the lectures reported by us, adverted to, but did not answer. "A revived Gothic architecture, therefore, so far as the new style preserves the characteristics of the old, must be, in modern England, no longer the national, but both an exotic style and an anachronism," &c. "Nor is there," he says, "such a general feeling or taste for Gothic as to entitle it to be called National, even in a limited sense." The effort to revive it, great and earnest though it be, is made by a limited party, not agreeing as to nature and extent of the revival.

"It is popular with a portion of the more highly educated members of the Church, including the clergy, and that more numerous and enthusiastic class, the members of diocesan architectural societies, who, debarred of the opportunity of studying other than Mediæval antiquities, have naturally been led to exaggerate the merits, and palliate the defects of the exclusive object of their attention; but it is discountenanced by the great body of our artists, architects, and men of taste, the influence of whose opinion is deservedly great; and is entirely disregarded by the mass of the people, if we are to judge by the aspect of our terraces and streets, of our manufactories, warehouses, docks, bridges—even ships; of those engineering works whose practical effectiveness, simplicity, and freedom from any littleness of aspect or purpose, recall to mind the monuments of Roman greatness, and even suggest a comparison between that people and the English nation."

To these instances of the exclusion of the Gothic should be added, also, fittings and furniture, porcelain and glass in common use, and jewelry and dress. Of the discordance noticeable even at the Houses of Parliament, where the greatest effort has been made to secure the reverse, we have spoken on previous occasions, and we should find the like in the houses and the studios of those who are our Gothic architects. How far are these circumstances to be taken as showing that Gothic and the national bent are opposed to one another? How far is that which is Gothic revived needlessly for the end of *art*, and operating to delay the general appreciation of the art, which are the chief aims, or should be so, of the practice of architecture?

Having shown how little claim there is to the title exclusively of Christian architecture, and remarking that the cell of the temple is reproduced in the chancel or sacrarium of the church, the author adverts to that general progress which has been contemporary with the revived Classical style. He repudiates, however, any support from other sources than intrinsic merits, though he attributes the Gothic movement to an illusive view of the Middle Ages. On the question of merits, he shows that the picturesque is not the exclusive property of the Gothic, since it may be doubted whether, in its highest degree, it is not rather to be found in the combinations of the severest Greek. The failure in the revival of the old Gothic, as confessed by the introduction of a different manner in the design for the Foreign Office, is attributable chiefly to the difference of feeling and circumstances between that time and this; and it is to be regretted that the attempt has been so extensively made in modern church buildings. The circumstances under which the revival commenced in church architecture, are to be explained; and the movement was greatly fostered by that in the church, towards what are sometimes called Anglo-Romanist doctrines. Significance was imparted to matters which had previously been left to the province of taste. Thus the depth of a chancel was regarded as affording a just estimate of its builder's piety.

But assuming the attempt at revival to be abandoned, and the necessity for new Gothic to be admitted, Mr. Scott, says the author, has not met the demand for a new style, his design having been condemned by persons who have intimate knowledge of old Gothic. Here we must interpose, and say the design has probably suffered through attempt to show the fertility and freedom of the style. But, qualities admirable in the old Gothic are unsuited to the present age, and no substitute for them is yet afforded in the new style. The "attempt to combine the sash with the tracery window, is sure to be unsatisfactory." Strip Gothic architecture of its mullions, and generally of its faults, excrescences, and elements of detail, to form the new style, and there will remain a mere carcass. Why not, therefore, he says, instead of this mutilated style, adopt and work upon the Classic, already perfectly adapted to modern civilization, whilst the Gothic is not in harmony. "It is a mistake," he continues, "to suppose that the Classic style prohibits any other than a flat roof." The roof was an architectural feature both in Greek and Roman temples. In many churches of the Renaissance, the pitch of the roof equals that in the Romanesque. The Mansard roof is well known, and Sir Christopher Wren's roofs were generally of high pitch. The omission in recent times to make the roof a feature, is not chargeable to the spirit or principle of Classic architecture. Regarding symmetry, this is essential in Classic and Gothic,—the author of the pamphlet says, in an equal degree. Readers of the *Builder* will discover much in these views that is identical with our own.

It is to be remarked that most of them coincide with those expressed by Mr. Scott himself in one of his lectures this year at the Royal Academy, already referred to. That lecture, in fact, expresses no more than would be said by those who believe that the nearest way to what can be the only object, namely, to the general practice of *art* in architecture, is first through the prevailing or the classic medium. But it is time that we looked into the volume, before alluded to.

We cannot but think there is reason for the regret of the author of "Pagan or Christian?" for the "little time" which he was able to devote to his "hurried pages," and which did not permit him to "bestow more thought on so essential a point" as the *definition* of Gothic architecture. Seeing that this is the only thing needed at the moment,—the definition of what is peculiar to, and characteristic of Gothic, and what is rather characteristic of all good architecture,—a book which, from the cause mentioned, puts forward apology in lieu of the definition satisfactory to the writer's mind, is not likely to be otherwise than injurious. There is much, it may be allowed, in the book, which, far from condemning, we recognize as in advance of popular views; the main argument, however, by which the author seeks to show that what he calls the national style and Christian architecture, is alone possessed of elements of further development, and that the Gothic (though the "English Gothic" rather than the manner of Mr. Scott's design) is alone fitted to be used for the Government offices, is erroneous, and would lead to results which the author is unable to foresee. The book not merely *appears* to be "contradictory;" it is full of contradictions,—to the facts in history, and to statements and reasonings in the book itself, which would suffice to upset the hasty generalizations that are made. The imitation of Mr. Ruskin's manner is observable throughout, and with the ill effects which might be predicated,—although it is seven years since the author read any portion of "The Stones of Venice." Noting the contents of the book, we find they are divided under the heads,—"Introductory," "Faith," "Reminiscences," "Moorish Episode," "Pagan?" and "Christian?" Without pausing to expose half the mistakes that are made, we may say he states that the object of the "Notes" is "to evolve certain facts in the psychology of architecture, which may serve to conduct the mind of the untechnical public towards definite conclusions on the general controversy between the advocates of different architectural styles;" and in the course of the Introduction he does not escape the mistake of treating leniently the "reproductions" of Mediævalism, whilst speaking of "flunkeylike conformity" to patterns of another character of style, or the fashion of calling the Houses of Parliament "that ornate blunder." The prejudice of the writer, also, is shown by his assertion of "the fact," that "we are so given up to the getting of gold, and the worship of it," that the cultivation of taste is not even thought of. He returns in the course of the last chapter to the inquiry, "How are we to conceive of this cotton-bestridden nation ever awakening to the amenities of art?" having just then forgotten how great is the diffusion of art, according to the painters and sculptors, which results from the money-getting; and his own reference to an example, though not the best he might have found, of the warehouse architecture of the north of England, which usually is in a style of modified Italian. Next, he endeavours to show that the artists of the Pagan time had only "the intellectual belief," and not the loving faith in art which animated "the artists of the Mid-Christian time;" and that the Italian artists relapsed into the scepticism of the Roman. In the "Reminiscences" and the following chapter, he reviews the characteristics, or as he states them, of the leading styles,—adverting to the pitch of the roof, and to the quantity of flat surface, which latter, he says, taking little notice of the pediments of the Parthenon, increases as we go southward. In the same chapter he speaks of the Conquest as the commencement of proper English history, saying there was no art prior to that time. He says the picture of vices in the Middle Ages is, as to the early period, "simply untrue;" and judging from his words, the character of Front-de-Bœuf would be a very erroneous illustration. He "cannot think we outshine the old men in realness," and proceeds to show this by referring to the naturalistic ornament of their architecture. After endeavouring to prove that Gothic architecture had its earliest development in this country, and that English art kept constantly ahead of its cognate species in the rest of Europe, he finds that Englishmen of the early Mediæval period had the three prominent attributes,—Religiousness; Realness arising out of that; and Love of Nature, akin to both." In proof of the first, he mentions the verticality of architectural composition. He also adverts to reduction of the amount of flat surface. He mentions the number of years occupied in building cathedrals, as though this were a merit. Defining ornament as "structural" and "accessory," and saying that the claim to high art is in proportion to the prevalence of the former, he treats the columns of a Greek temple as accessory,—whilst they rather were "the virtual *building*." He also contrasts what he calls the Grecian Hecatompedonism, with the non-mechanical character of the Gothic,—a favourite line of argument with non-professional writers, and strangely at variance with what is recognized by those who seek to discover the system of proportion in the Mediæval structures. To say that there was no idea of *proportion* at all, in the Gothic

architecture,—which alone can be the meaning of the contrast drawn,—would, indeed, be the condemnation of the style. Mr. Muir's grouping of Sculpture, Painting, and Poetry, as *Imitative*, or *Descriptive* Arts, and Music and Architecture as *Ideal* Arts, and his description of Architecture as the Idealization of External Nature, are correct, except that as to the first three, the common meaning of "Imitative" fails to convey that there is art; but his reference to the Gothic cathedral interior, as resembling the avenue of trees, whilst the Greek peripteral temple is like nothing in nature, displays as much misconception of the relation of art to nature, as does his reference to the non-uniformity of the landscape as in favour of inattention to balance of parts in a composition. Respecting the nationality, he endeavours to controvert the assertion of Lord Palmerston, that the Gothic was not an English style, but "was imported from abroad,"—not noticing such evidence as that of Gervase, of the employment of William of Sens at Canterbury Cathedral, and whilst speaking of the proneness of public men to hazard assertions without examining facts as savouring of "pervading untruthfulness," quoting passages from certain lectures and papers which prove nothing as to the point in question. From Mr. Scott, he would differ on matters of the greatest importance; but to these and other matters we must refer hereafter.

ON BUILDING-STONES—THE CAUSES OF THEIR DECAY, AND THE MEANS OF PREVENTING IT.*

THE Portland oolite is the material which is most frequently used for the higher class of buildings in London, and which certainly has stood the action of time and atmospheric changes more satisfactorily than other stone introduced on a large scale. It is, as its name implies, obtained from the upper members of the oolitic series in the island of Portland, at least for the London market, but there are outlying patches of the same formation at Upway, near Weymouth, and near Fisbury, in Wiltshire, which might be rendered serviceable, now that the railway communication with those parts of England has been so much improved. The colour of the Portland stone is at first of a rather cold chalky white, and indeed it is always rather objectionable, though the rapid accumulation of soot which takes place in London renders the consideration of colour one of very minor importance. Blocks of any required dimension can be obtained from the Portland quarries, and the stone is hard, dense, usually free from shakes or vents of a serious character, and yet it is easily worked either by the chisel or the plate-saw. The ordinary weight of a foot cube of this material is 147 lbs., and the load it would bear is stated to be about 3,297 lbs. per inch superficial. The upper beds of the quarries are used in some public works, under the name of "roach;" they are specifically lighter than the common beds, very full of fossil shells, less distinctly oolitic in character, and from the more perfectly crystallized character of the carbonate of lime, which forms the cementing material of the mass, they are better fitted to resist alternations of dryness and moisture. It is for these reasons that the Portland roach is so extensively used in docks, piers, or other hydraulic works. The weight of the foot cube is about 127 lbs. The stone obtained from the eastern side of the island of Portland is very inferior in quality to that obtained from the western side, a fact of which the architects of the time of Sir C. Wren seem to have been aware, but which did not seem to have attracted the attention of their successors of some thirty years since; for the stone used in St. Paul's, the City churches, Somerset House, &c., has stood remarkably well; whilst that used in the gates and screen of Hyde and Green Parks has decayed. The former was obtained from what are locally called the West Cliff quarries, the latter from the East Cliff, or near the extremity of the island.

The Bath stone is obtained, as its name implies, from one of the members of the great oolite in the neighbourhood of Bath. In colour this material is more agreeable than the Portland stone, and its texture is very similar, but it is softer (so much so, indeed, as to allow of its being worked with the tooth-saw), and more absorbent; and, therefore, unless precautions are observed in the manner of using the Bath stone, it is exposed to rapid decay. Some very painful illustrations of this fact may be witnessed about London, and, amongst others, the restoration of Henry VII.'s chapel may especially be cited. The weight of the foot cube of Bath stone is about 123 lbs., and the load it will bear before crushing is estimated to be 1,800 to 2,000 lbs. per inch superficial.

The Caen stone is obtained from the great oolite of Normandy, near the town of that name, and is much used in building operations in London, on account of the beauty of its grain and colour, and of the ease with which it is capable of being worked; for when freshly quarried, the Caen stone can be cut with the toothed saw, and carved with ordinary carpenters' chisels, even more easily than the Bath stone itself. The upper beds of the quarries near Caen yields stone of small dimensions, but of a much more durable nature than those furnished by the lower beds. Unfortunately, however, the requirements of architects have induced the stone merchants to abandon of late years the material of superior quality, in order to secure the large blocks so universally called for; and thus the reputation of the Caen stone has rather unjustly suffered. But it is perhaps advisable here to remark, that in the public buildings of the town of Caen, the local material is not usually employed in positions where it would be exposed to the rainfall, or be able to absorb water by capillary attraction, and that the basements, or the exposed parapets, towers, or steeples, are built of other and more resisting stones. The weight of the Caen stone is about 120 lbs. per foot cube, and its crushing weight about 2,000 lbs. per inch superficial.

In addition to the Caen stone, the oolite of Normandy supplies the London market with a material of great beauty, known by the name of the Aubigny stone, which is harder, finer in its grain, more crystalline in its structure, and able to support a greater crushing weight than the Caen stone. From the fearful state of decay of the mediæval buildings of Falaise, the town in immediate proximity to the Aubigny quarries, it may, however, be suspected that this material would not be of a durable character, notwithstanding the fact that the supply is now obtained from different beds to those formerly worked. But there are other stones to be worked in Normandy, which might furnish our builders with extremely valuable resources, such as the Ranville, Fontaine Henri, Creuilly, Coursulles, and Quilly stones; but, unfortunately, they are little known amongst us, and the prejudice against the use of Caen stone (in consequence of its failure when injudiciously employed in such buildings as Buckingham Palace, Mr. Hope's mansion, &c.), has extended to the whole group of Norman stone.

All these varieties lately mentioned as coming from the oolitic series, are characterized by the remarkable purity of the carbonate of lime which constitutes the basis of the stones. The carbonate is often sub-crystalline, and generally speaking assembled in minute globules, similar to the roe of fishes, from whence the formation derives its name. Many shells, and vegetable and animal remains occur in some of the varieties, and they give rise to some peculiar and hitherto unexplained conditions of durability in the stones. Thus, when the the test of the shells has been replaced by the decidedly crystalline carbonate of lime, they assume a remarkable degree of hardness, and if present in sufficient numbers they communicate great powers of resistance, as in the case of the Barnack, and the Roach Portland; but this influence of the shells may be imperceptible if the cementing material should happen to be of an earthly, or of a soluble character, and if much organic matter should be present, it would allow the formation of certain salts when the stone is exposed to air and moisture, which would seriously endanger its cohesion. The fossils also tend to define and separate their beds, and thus to render it more than usually necessary to pay attention to the practical law, that "stones should always be used bedwise:" and here it may be advisable to remark that whenever the materials of a stone have not been affected by their proximity to any source of igneous action, they will not admit of the stones being used in false bedding, although some varieties of the Jurassic limestone, or of the tertiary deposits of the Paris basin, are occasionally used in such positions without any immediate or apparent risk. Nearly all the oolites yield a pure rich lime, of great service in agriculture, but of little real value in building operations (on account of the solubility of the lime), unless mixed with some form of soluble silica. The blue lias lime, which contains a large proportion of the silicate of alumina, is, however, much used for hydraulic works.

The Purbeck limestones were formerly much used in London for paving footpaths, and some varieties were worked for sinks, troughs, or cisterns, under the name of the Purbeck Portland, but the irregularity of hardness, and the small dimensions of the Purbeck flags have led to its almost universal abandonment in favour of the harder and more uniform Yorkshire stones. The Purbeck and Petworth marbles (which are composed of an agglomeration of freshwater univalve and bivalve shells, united by a crystalline carbonate of lime, of a pleasant green colour, and some considerable beauty) were formerly much used in ecclesiastical decoration, and when placed bedwise they have resisted the action of time very satisfactorily, provided always that the earthy variety had not been used. Some of the shales of the Wealden series are occasionally used to cover the roofs of buildings in Sussex, but their weight, and their very irregular texture, oppose their general application at a distance from the quarries.

Now, the conditions under which the stones above described decay, when they are placed in a building, are partially mechanical and partially chemical. Of the former, the most important are, first, the dissolving properties of atmospheric moisture, in its various forms of rain or mist; secondly, the disintegrating action of changes in atmospheric temperature. Of the latter, the most important are, first, the chemical reactions which take place in the ingredients of the stones themselves; and, secondly, the new forms of matter which are superinduced from without, of a nature to affect the stability of the original combination.

The dissolving power of atmospheric moisture seems to depend greatly upon the quantity of free carbonic acid gas it holds in solution, and though this quantity in any given volume of water be extremely minute, in course of time every substance which has an affinity for it will yield more or less to its action. The silicates of potash and soda, for instance, which are present in the igneous rocks (or, to dwell especially on the class of materials under our notice, in the Devonshire granites), are easily decomposed when rain-water falls upon them; and, being removed mechanically by any of the countless actions of nature, they leave the other ingredients of the material exposed to the mechanical disintegration of changes of temperature. The simple carbonates of lime, again, sometimes absorb carbonic acid with much avidity, and pass into the state of the soluble bicarbonates, and, thus, in proportion as the original face of a stone is removed does the lower surface become exposed to the action of the rain. The rain-water of such a town as London not only does contain large quantities of free carbonic acid, but it also contains sulphuric acid and ammonia, which are capable of exercising a very deleterious influence upon the carbonates of lime. In discussing, however, the effect of these agents upon building stones, it is essential to bear in mind the fact that the mechanical state of the elements of those materials greatly modifies their resistance. Those which are of a crystalline character do not yield so readily as those which are amorphous, and the crystallisation produced by volcanic or plutonic influence appears to be even more permanent than that which takes place in the ordinary way.

It follows from these considerations that the stones of an irregular, confused, earthy texture (which are able to absorb considerable quantities of moisture, and which contain silica in a soluble form, or the carbonate of lime), should never be employed in positions where rain water could lodge upon, beat against, or be taken up from external sources by capillarity, or any other action. In positions exposed to any of the above dangers, none but non-absorbent and decidedly crystalline materials should be used, and as those qualities are almost exclusively possessed by dense stones, it may be considered that the mere specific gravity of a stone is a *primâ facie* indication of its constructive value.

But atmospheric moisture, when absorbed into building stones, acts upon them quite as much through the changes in its own volume, in passing from the liquid to the solid state at the time of frost, as it does by the chemical dissolution it produces. If the stones should be placed in such a manner as that water should accumulate in any perceptible quantities between its various layers, and if the position of those layers be such that the expansion of the water in freezing cannot take place freely, the respective layers containing the water will be violently detached from one another. Now, all stones, even the crystalline limestones and slates, have certain planes, or directions of cleavage, or of stratification, along which water

* See page 132, *ante*.

flows more readily than in any other course. If the stones be placed in a building with those planes in a direction likely to retain rain falling upon, or absorbed through, the surface (which is the case when stones are placed "bed to weather"), disintegration must ensue, unless the edges of the beds be left free; and even in that case there is danger of frost detaching one layer from another. It is indeed a primary law of construction that every stone should be laid "bedwise;" and few modern theories have produced so much practical mischief as the one lately propounded, that "it was a matter of little importance in what direction of the bed a stone was laid." Fortunately, even unpractised eyes can detect the bedding of the majority of the London building stones, either from the position of the fossils, or the variety of texture, or of colour; in the less distinctly marked stones even, practised eyes can detect the planes of cleavage, and a good workman will hardly ever be mistaken in his judgment. It is unfortunate that the modern system of competition throws so great a temptation in the way of the practical builder, as to render it a mere matter of chance whether the constructive law, above mentioned, be observed or not, unless a costly system of supervision be organized, and thus the precautions often taken by the stone merchant, to indicate the upper bed of the material he delivers, are defeated.

In the stones which present distinct traces of bedding it often happens that a difference of the chemical, and even of the mechanical structure may be observed to exist in the respective layers about the lines of separation: under such circumstances, when the stones are laid bedwise, it is by no means rare to see the softer parts, near the lines of bedding, removed to a considerable depth from the surface. This action may be observed, amongst other instances, in the Purbeck marble of the pillars of Westminster Abbey, and quite in the protected parts of the building. It would seem that, in this particular case, the more earthy particles upon the planes of bedding are decomposed by the action of the moisture they absorb from the vapours suspended in the atmosphere, and that the cohesion of the various particles being thus destroyed, they gradually fall away. Westminster Abbey furnishes also numerous illustrations of the danger of placing stones, of whatsoever description they may be, in any other than the natural bed, for even a glance at the sheltered parts of the north transept, in the churchyard, would enable anyone to detect, by their conditions of decay, the stones which have been laid well or ill.

The chemical reactions which take place in building stones, other than those resulting, in the interior of the country, from the agents directly presented by atmospheric moisture in the form of carbonic acid gas, sulphur, and ammonia, or upon the sea-shore, in the form of hydrochloric acid, or of common salt itself, in minute particles, are mainly those arising from the oxygenation, or the hydration of the various ingredients of which those stones are composed. Thus, if the oxide of iron be present in any notable proportions, it is likely to undergo changes of a nature to disturb the stability of the compound, and even the crystalline sulphates of lime are exposed to chemical decomposition, in consequence of the liberation of the sulphuric acid gas they contain. The other mineral salts, such as the silicates and the sulphates of iron, so often met with in building stones, are at times susceptible of very injurious decomposition, and the soda, potassa, or the organic maters the stones may contain, as frequently give rise to the formation of new salts; mainly under the action of the atmospheric moisture it is true, but also under the influence of the partial decompositions which take place around them. It is to be observed, however, that the danger to building stones from this peculiar class of actions, is very small and very slow in its action, compared with the dangers arising from the mechanical disintegration produced by atmospheric causes; and that, with the exceptions of the action of free carbonic acid upon the felspar of granites, of the changes of state produced in limestones by the same agent, and the modifications of the abundant salts of iron in some peculiar stones, there is little practical necessity for dwelling upon this interesting but obscure branch of applied chemistry.

The actions sufficient to affect the stability of the composition of ordinary building stones, by reason of the new forms of matter they superinduce, may principally be considered to be those resulting from the absorption of the gases of the atmosphere, and especially the extraordinary process known by the name of "saltpetering," or, more correctly speaking, of nitrification. This process displays itself in the formation of minute crystals, efflorescing from the interior to the exterior of the stone, and it leads to the destruction of the exposed surfaces of the latter, through the gradual removal of the minute particles, in consequence of the disintegration produced by the expansive action of the crystals in process of formation. It is supposed that the organic matter diffused through nearly all stratified deposits gives rise to the formation of certain nitrates (such as the nitrate of lime, or the nitrate of soda), under the influence of damp, and of air, and of light of certain descriptions; for nitrification certainly takes place most abundantly near damp ground, rising in a wall *pari passu* with the range of the capillary attractions of its materials, and upon the northern or shaded faces of the said walls. Not only does this nitrification throw off the minuter and less adherent particles of the building materials themselves, whether they be stone or brick, but it is also able to detach any protecting coat which may be put upon them, if the adhesion of that coat to the adjacent material should not be of a very energetic nature. Let the adhesion, however, be ever so energetic, if once the action of nitrification should have been established, it must run its course, and the amount of evil it is capable of producing will simply depend upon the quantity of organic matter originally contained in the materials, or susceptible of being absorbed by them from the atmosphere. The secondary limestones which have not been affected by plutonic action,—the loamy clays, some kinds of pit sand, sea sand, and some descriptions of natural cements,—are particularly exposed to the danger of nitrifiation in damp positions; and, whenever it is once established, it is in vain to expect to be able to preserve any mural painting, or even a sculpture of a delicate character. Dumas and the French chemists appear to consider that the atmosphere itself would be capable of furnishing the nitrogen required for the production of the effect under consideration; but there is hardly any occasion to resort to so extreme a supposition, when we reflect upon the extraordinary diffusion of the remains of animal life in stratified deposits. It is also to be remarked that nitrification will frequently take place in the most dangerous manner precisely in those materials whose exposed surfaces are covered with coatings impervious to the air, and that in houses or buildings of that character it is most energetic on the interior faces of the walls, or precisely on those which are least exposed to the atmosphere. In fact, it is mainly in consequence of the absorption of moisture by the building materials, and of the chemical changes thus produced in the organic matter those materials may contain, that the peculiar form of decay which accompanies "saltpetering" arises.

Practically, then, the great agent of destruction of building stones, in any of its modes of exhibition, is the damp, or the water supplied by the atmosphere, either directly or indirectly, and the efforts of those parties who seek to prevent this destruction must be directed to combating this primary source of evil. Fortunately, the precautions to be observed for this purpose are very simple, and they only require a little common sense on the part of the builders charged with their application to the materials at least which have been long before the public.

The first and foremost rule is never to employ a porous absorbent stone in the ground, or in elevation, unless, in the former case, it be maintained constantly wet; or unless, in the second, the absorption of moisture from the ground be prevented by the interposition of some impermeable material. Stones of the description just mentioned should never be employed for the copings, parapets, window-cills, weather beds of cornices, plinths, strings, or other parts of a building where water may lodge. Care must also be taken to bed such stones with mortars which are not exposed to develop in themselves, or likely to excite in the stones the efflorescence of any of the nitrates of soda, potassa, or of lime. If porous or absorbent building stones must, however, be used in exposed positions, and no efficient precautions be taken to prevent their decay, it will be found that the decay will commence, and be most apparent in the zone of alternate dryness and humidity, or, as the workmen say, "between wind and water." The stone work about that zone should, therefore, be executed in such a manner as to allow of its being easily replaced, if requisite, and in case the exhibition of the decay should take place inwardly, care must be taken to isolate the decorative plastering or wall lingings from the surfaces which are likely to be covered by efflorescence. These precautions are, after all, only very unsatisfactory palliations of an evil which ought never to exist; and it is, therefore, advisable to direct the attention of our English builders to the practice of their French neighbours, who use different stones according to their position in a building. In Caen itself, for instance, the plinths or basements of houses are executed in granite, or in the Ranville Cherence, or Creuilly stones, which are practically non-absorbent; and, moreover, in the best buildings the Creuilly stone is used for the exposed parts of the elevation, although the Caen stone is found at the very gates of the town.

But even when every precaution has been taken to prevent the absorption of moisture from the ground, or the actual rainfall, it is necessary to protect the exposed surfaces of the soft and absorbent, or, to use a technical phrase, of the hygrometric stones, by some coating which shall prevent their taking up the injurious moisture from the air. This is done in various ways. 1. By painting. 2. By impregnating the expressed surface with oleaginous or fatty matters. 3. By washing the face with some solution able to convert the material itself into an insoluble non-absorbent substance. 4. By filling in the pores of the stones with an insoluble material which should effectually exclude water.

1st. The objection to oil paints consists in the facts that in proportion as the oils which serve as their vehicles evaporate, the particles of the stone they originally protected become again exposed, and even the absorbent powers of the stone itself contribute to this action. It, therefore, becomes necessary to repeat the painting frequently, and thus, in the end, the delicacy of any mouldings or carving must be effaced. The unequal rates of expansion of the stone and of the oil paints in time of frost tend to increase the danger of irregular and unequal exposure above attributed to the evaporation of the oil.

2nd. As to the injection of oleaginous, fatty, or waxy matters, it must be evident that it likewise can only act mechanically by closing the pores of the stones; and, therefore, although instances may be cited in which when the surface so protected is maintained at a constant moderate temperature, the system of injecting those materials has succeeded; yet, if the protected surfaces be exposed to extremes of heat and cold, the heterogenous materials thus affected must be acted upon in very different manners. Experience has confirmed this theoretical inference, and it has been found in practice that the protecting coats of any of the materials alluded to are gradually detached from the stone, and that they require to be renewed quite as frequently as oil painting itself does, when used on the exterior of buildings.

3rd. One of the most successful attempts yet made to prevent the decay of soft building-stones, by washing their exposed faces with a fluid able to affect their nature, is the process lately introduced by M. Kuhlmann, in which the carbonates of lime are washed with a solution of an alkaline silicate, with a view to converting them into silicates of lime, through the elective affinities of the lime and the silica. In some cases this ingenious and beautiful system has succeeded, and very great hardness, very resisting powers, have been communicated to the stones operated upon. But, unfortunately, the action of the silicic acid is a very slow one; and when the surfaces washed in the manner described are exposed to rain, it is by no means rare to find that the solution is carried away. There is another very serious objection to the use of the simple alkaline silicates, namely, that when they do act upon the subjacent stone, the soda and potassa (which are generally used) are left free, and in efflorescing, they are likely to carry away the finer details of the sculpture or moulding; at the same time, as they form, to some extent, deliquescent salts upon the face of the stone, they attract to it a dangerous amount of humidity.

4th. The problem of protecting the surface of a soft building stone, after every precaution had been taken, be it observed, to prevent the internal absorption of moisture, seems to me to have been the most successfully solved by Ransome's last patent process. In this process, a fine precipitate, clothing the whole of the pores of the surface of the stone, is produced by firstly cleaning the stone carefully from dust, or other extraneous matters; then the stone is made to absorb as large a quantity as possible of the silicate of soda or of potassa, and when this solution has dried into the stone, a second wash is applied, consisting of the chloride of calcium or of baryta. In practice, Mr. Ransome uses the most frequently the silicate of soda and the chloride of calcium; and the effect of the respective applications is, that a double decomposition takes place in the washes, giving

rise to the precipitation of a finely crystallized silicate of lime or of baryta in the pores of the stone, and an efflorescence of extremely soluble salts of the chlorides of soda or of potassa. The former remain in the pores, the latter are speedily washed away by rain. As the rate of contraction and expansion of the silicate of lime is, as nearly as may be, the same as that of the stones it is intended to protect, there is no danger of the precipitate being detached by this cause. It may be added that Kuhlmann's process is only applicable to the preservation of the carbonates of lime, whilst Ransome's process is equally applicable to that class of materials, or to the sandstones, or even to bricks, or plaster, or cement. It was precisely to this process also that I referred when speaking of the use of chalk as a building material, and I am convinced that, by its application, that abundant and economical substance might be very advantageously applied to our daily wants.

Perhaps it is going a little beyond our immediate subject, but I cannot refrain from saying that the principle of the double decomposition, applied by Ransome to stones, might be applied to the precipitation of a soluble glass upon woods or textile substances, and even to the protection of timber from the attacks of the boring worms.

Finally, I repeat what I have said elsewhere, namely, that the common sense of the whole matter is to use only such stones as have been proved by secular experience in the locality of the building to be little exposed to decay. I use the term "secular experience," because the Commission appointed to select the building stone for the Houses of Parliament (which Commission cost the country 11,000*l.* for its report, and, perhaps, 200,000*l.* extra on the price of the labour of the building), recommended an untried stone, mainly upon faith in the indication of Brard's test, which had, even in those days, been seriously challenged. The consequences of this unfortunate error are now notorious, and it is worthy of remark, that the newest parts of the Houses of Parliament, viz., the west front, are precisely those which are the most seriously affected.

There are, however, many economical and constructive reasons for resorting occasionally to the use of soft, easily worked, and, as such, almost always perishable stones. In such cases, those stones must be isolated from ground, or other damps, as effectually as possible, and their exposed surfaces covered at once with an efficient protecting coat, before the process of saltpetreing can commence. I believe that Ransome's process is the best which has been yet presented to the public for this purpose; but, at the same time, I equally believe that if any internal decay, or any organic decomposition, so to speak, be once allowed to establish itself in a building stone, it will be impossible effectually to arrest its progress. The efflorescence produced by any serious tendency to nitrification will, in fact, continue, however effectually the exposed surface of the stone be closed by a mechanical or a chemical deposit, and it is precisely on this score that we may explain some of the equivocal results of even Ransome's process for preserving stones, which are said to have taken place. Whatever process may be adopted for protecting the surfaces of soft stones, it is, moreover, necessary to pay attention to the constructive law of laying them upon their true bed, and also to protect the more exposed portions of the work by covering them with harder, more resisting, and impermeable materials. Even the latter materials themselves are at times exposed to decay between wind and water, and therefore every possible precaution should be observed to limit the range of the absorptive powers of the stones; the first and foremost precaution for basement works being to establish an effective drainage all round the building, at such a distance from it as to prevent the capillary action of the stones themselves from obtaining any supply of moisture from the ground. In the upper parts of a building it is equally essential to prevent the rain from lodging upon any parts of the stone work, especially when absorptive stones are used above projections likely to arrest falling water.*

THE ATLANTIC TELEGRAPH.—At a recent meeting of this company, a resolution was unanimously adopted, to the effect that an additional capital of 20,000*l.* be raised to attempt to bring the existing cable into working order, or, in the event of failure, to sell it.

* Report of discussion which ensued we shall give in our next.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

BUILDING AND THE BIBLE.

THE ordinary meeting of members was held on Monday last, at the house in Conduit-street. The chair was taken by the president, C. R. Cockerell, esq., R.A.

Mr. C. C. Nelson, hon. secretary, read the minutes of the last meeting, which were confirmed, and also a list of donations to the library. A vote of thanks having been passed to the donors,

Mr. Godwin, vice-president, observed that the committee appointed by the Society of Arts was again considering the question of copyright. He held in his hand a draft of the bill which it was proposed to introduce into Parliament on the subject, and his motive in mentioning the matter was, that architects, as a body, should aid in endeavouring to get protection for their copyrights. The bill went to this extent, that the author of any "architectural work," and his assigns, should have a copyright in the same for the term of his natural life, and for thirty years after his death. In looking to the interpretation clause, he found that the architectural work which it was proposed to bring within the provisions of the bill meant the representation of any design for any edifice or part thereof, by plan, section, or model; but it did not give any protection whatever to works executed. It, therefore, became a question of some importance to the profession, whether or not they thought themselves in a position to ask for some protection against the copying, and reproducing of works executed. He was induced to mention this subject in order that the Institute might, if so minded, offer suggestions to the Society of Arts, and which he felt persuaded would receive attention at their hands.

Professor Donaldson said he quite agreed with Mr. Godwin in the propriety of his suggestion. He hoped the subject would be taken up by the profession; and, if the draft of the bill were submitted to the committee of the Institute which had been appointed to consider the subject, they might be able to introduce words which would include the works of the architect, as it frequently happened that the works executed were of more value than the works drawn.

Mr. Papworth said he wished to draw attention to another subject of great importance to the architectural body. He found, on reference to a journal which he held in his hand, that the council of the Institute had appointed a committee to consider the expediency of instituting a voluntary examination of students, and the granting of certificates. If the paragraph to which he referred was correct, he must say that, as a member of the Institute, he was exceedingly glad to hear it, and was surprised that so important a subject had come first to his knowledge through the instrumentality of the press.

Mr. Nelson said it was certainly correct. A meeting of the committee had been held last Saturday week, and another meeting would be held next Saturday; and any conclusion to which it might arrive would be communicated to the Institute in due time.

Professor Donaldson observed that the question of Mr. Papworth was very *apropos*, and that as a committee was sitting on the subject, it was probable that many members of the profession might wish to submit their opinions to it.

Mr. Nelson said the council, having the power to appoint committees, had appointed a committee on this subject, and the scheme would be further considered, and, when ready, would be submitted to a general meeting of the members.

Mr. Robert Kerr then read a paper "On the historical References to Building and Art in the earlier Writings of the Old Testament," of which we give, for the present, the following abstract of conclusions:—

The only written record of the primitive ages ever likely to be at our command is that contained in the sacred writings of the Jews. To that the purely historical element of these, when separated from the purely theological, becomes of the utmost value in historical and chronological science, treating, as it indirectly does, of all that rises to the surface of society from the infancy of civilization to the very time of Herodotus.

The manner of free translation attributed to Ezra does not materially lessen the historical value.

Whether written by Moses himself or not, the account of the Exodus may be taken as belonging to the time of the events, and, therefore, directly historical.

The history of Genesis is of Chaldæan type as opposed to Egyptian. Egypt is ignored.

It is, moreover, of pastoral type as opposed to the civil—agricultural of the time; the building of cities being always attributed to races accursed.

The ark of Noah, in description, is a timber house of the period, built free to float; not a vessel for sailing.

Nimrod was the founder of primitive empire, and, as such, execrated in tradition. From his Babylon sprang Nineveh, received chronology being here questionable.

The term *city* signifies an agricultural hamlet, large or small, generally fortified.

The principle of enclosure was described.

The Babylon of Herodotus was alluded to, and proof offered in figures that his description might be reduced to credible form.

The Tower of Babel was probably the ruin of the first colossal effort in building, attributed in tradition to Nimrod.

The pastoral patriarchs built no cities: they introduced to us the altar, the monumental pillar, the grove, the sepulchre, the heap. The Pyramids of Egypt are of the class of the heap.

The manufacture of teraphim and amulets was the very first step in delineative art. The spiritual monotheism of the race of Abraham was specially directed against this, as the Protestantism of the age.

When we come to the time of Moses, we have to deal with direct history, capable of application to the theories of Egyptian and Assyrian chronology as connected with this by the date of the Exodus.

The period of the nineteenth dynasty of Manetho for the Exodus (it being generally supposed to correspond with this) can scarcely, without further inquiry, be accepted as regards Scriptural allusion, the state of Egyptian society described being not that of flourishing and powerful empire so much as that of a very primitive and simple form of government.

The usual proofs of synchronism being referred to, the question was, whether the Exodus could be thrown back in date to correspond with a period even before the Pyramid builders.

Future Jewish art was strangled by the prohibition of image-making. The works of Solomon were Tyrian. Their departure from the true principle of the Mosaic law occasioned the immediate downfal of the nation, as an evidence of the absolute necessity at that time of the Mosaic policy against art.

At the conclusion,

Mr. Lockyer said that no one could doubt the talent, industry, and great research, which Mr. Kerr had brought to bear in the preparation of his paper; but he (Mr. Lockyer) was of opinion that he was entirely wrong in the view which he had taken, from a misconception of the books which he had studied. The five Books of Moses had been written more as a body of law than for any other purpose, and as a short synopsis of the history of the Hebrews. Having referred to the various speculations on the subject of the precise period of the Exodus, upon which, he stated, the sacred records themselves were somewhat contradictory, Mr. Lockyer proceeded to state the reasons which induced him to believe that it must have occurred under Menepthah, a king of the nineteenth dynasty, for the following reasons. The Mosaic narration was corroborated in many particulars by the Egyptian tradition of the expulsion of the lepers, which occurred during the reign of that king. Moreover, the father and grandfather of Menepthah—Rameses, and Sethos—must have reigned previous to the Exodus, as they overran and conquered the whole of Western Asia, of which we find no record in Holy Writ. Their conquests are recorded at Karnac, and amongst the conquered tribes are found the Canaanites, Amorites, Hittites; Phœnicia also appears, Mesopotamia, Syria, and even Bactria. The land of Canaan was not, as was assumed, a hilly place, but Mesopotamia was. He also thought it hardly possible that the Egyptians would have called a city built by them Rameses, unless after the king who founded it, and there was no Rameses until the nineteenth dynasty. With regard to the manufacture of bricks, there was a view of a tomb at Thebes, engraved by Sir Gardner Wilkinson, in his work, showing the process by which they were made. Sir Gardner was of opinion that the manufacture of bricks was a monopoly of the Government, and that there was a tax upon them. There was no reason to suppose that Moses was ever at Thebes, for the Jews were in Lower and not in Upper Egypt. It was said that the shepherds were "an abomination to the Egyptians," and the only reason for supposing this to have been the case was, that the Hyksos invasion had oc-

curred previous to the events recorded in the Mosaic account. On the subject of Egyptian architects, it might be interesting to know that some of these individuals were better endowed with worldly possessions than their modern brethren, as one of their tombs at Thebes contained a record of the extent and nature of his possessions, which included 825 oxen, 760 goats, 970 rams, and so forth.

Mr. Fergusson said that there was comparatively so very little reference to architecture in the paper they had just heard, that he felt some difficulty in making any observations upon it. The Temple of the Spheres, erroneously considered the ruins of the Tower of Babel, was undoubtedly built by Nebuchadnezzar, for every brick of it was stamped with his name. Sir Henry Rawlinson had proved this to be the case, as he had dug up some of the bricks from the very centre of the pile, and the cylinders at the corners also showed that it had been constructed during his reign. There was not in his opinion any reason for supposing that the Temple of the Spheres was the Tower of Babel. It had been built in stories of several colours to represent the planets; and, so far from being the tower mentioned in Scripture, there was conclusive evidence that it was not. The domical building in the diagram referred to by Mr. Kerr was a sepulchral monument,—a tumulus similar to the Assyrian tumuli,—but they subsequently became used in India as relic shrines, or as the sarcophagi of Catholic churches were subsequently converted into altars. With regard to the walls of Babylon, he thought the account, by Herodotus, of their extent, was extremely doubtful. There were no remains of them, and there was no proof that the city was so large as Herodotus represented it to be. The walls of Nineveh were not one-tenth of what Herodotus represented them to be; and therefore Herodotus could not be depended upon in his account of Babylon. Mr. Kerr stated that he had taken out the quantities of the walls of Babylon, but he (Mr. Fergusson) would like to ask an architect to build a perpendicular wall of mud 300 feet high, to stand under a tropical sun, and hear what he would say to such a proposition. Indeed, he considered the statement too absurd for a moment's consideration.

Mr. Ashpitel expressed his regret that not a single word had been mentioned in the paper about any building of which the record was preserved in the Old Testament. The first buildings we read of in ancient Scripture were the Temple of Jerusalem and the House of the Cedars of Lebanon, the dimensions of which were given, and which had attracted the attention of so many learned persons. He owned he was startled by many of the assertions made by Mr. Kerr, involving, as they did, vexed matters of theology. As, however, they were not theologians, but architects, he would not attempt the discussion of them.

Mr. A. Beresford Hope wished Mr. Kerr had carried his investigation into the discovery not only of the houses and tents, but of the actual cities of the Moabites in the wild mountainous regions to the east of the Dead Sea, made by Mr. Graham, who, unfortunately, not being an architect, had merely played round the subject, and had not furnished any drawings from which a correct idea might be formed. There was a great field open in the treatment of early Christian architecture, and he would be a great benefactor to the science of ecclesiastical architecture who would undertake it. So little was known about the early history of the Cities of the Plains, that any researches on the subject could not fail to be deeply interesting.

A visitor said that it might, perhaps, be interesting to know that Mr. Graham's discoveries had been followed up by the Prussian consul at Damascus, and that some very interesting explorations had been made at the scene of his labours, of which accounts had been published in a German periodical.

Professor Donaldson expressed the hope that as Sir Gardner Wilkinson, whose name was celebrated in connection with Egyptian antiquities, was present, he would not allow the discussion to close without making some observations.

Sir Gardner Wilkinson said that he could not at so late an hour enter into details. The chronology of Egypt, to which Mr. Kerr had referred, was in a very uncertain state, and it was extremely difficult to say when the Pyramids and other monuments were built; but, in his opinion, there could be no doubt that they were built before the Exodus of the Israelites. The fact of the Pyramids not being mentioned in the Bible was no argument against their not being in existence, as it was not the object of the authors of the sacred books to write the history of the Egyptians. He was not surprised, therefore, that no mention of the Pyramids was to be found in the sacred writings. It had been said that Homer had never mentioned them, and that consequently they did not exist in his time; but this was not a fair argument against their non-existence in Homer's time. Herodotus, who visited Egypt, scarcely speaks of Thebes at all; and did not mention the great temple of Carnac. The question of chronology was, in fact, as yet in a very uncertain state; but something might possibly come to light one day to enable the curious to fix the date. It was remarkable that the horse was not represented on the tombs before the eighteenth dynasty, but as horses were mentioned in the Bible it was but reasonable to suppose that the tombs were anterior to the Exodus. With regard to the architects of the Israelites, all that was known was that they worked for the Egyptians; but with regard to their being prohibited from representing the human form, it should be remembered that the Arabs, who were similarly interdicted, had exhibited a good deal of taste in architecture.

Mr. Papworth said he found himself obliged to dissent from almost all the speakers who had preceded him. Sir Gardner Wilkinson said that the Arabs had a high style of architecture, but he (Mr. Papworth) challenged any one to point out a single Arab architect. The Byzantines furnished the first, and the Spaniards the second buildings, while the Armenian Greeks were in later times employed by the Arab Sultans. Mr. Papworth, in conclusion, proposed a vote of thanks to Mr. Kerr, whose lecture he concurred in thinking would form a novel introduction to the history of Early Eastern architecture.

The Chairman said, the lateness of the hour (ten o'clock) would prevent them from going into any further discussion, or, perhaps, he might say confusion. Mr. Kerr had favoured them with an eloquent and interesting paper, and it was to be regretted that more time was not left for its discussion.

The vote of thanks having been unanimously accorded,

Mr. Kerr, in acknowledging the compliment, said that the brief discussion which the paper had elicited showed that the subject was altogether uncertain. In treating the subject which he had selected for his paper, he had endeavoured to do the best he could; and, if he had shown that very little was known about it, he was quite satisfied.

The following gentlemen were on ballot elected Fellows of the Institute:—Raphael Brandon, of 17, Clement's-inn, Strand; John Loughborough Pearson, of 22, Harley-street; John Pollard Seddon, Associate, of 6, Whitehall.

Mr. Norman Shaw, of 8, Albion-road, St. John's-wood, was elected an Associate.

PRIZES TO ART-WORKMEN.

THE ARCHITECTURAL MUSEUM.

ON Wednesday evening last the prizes awarded to art-workmen for the most successful specimens of carving and coloration were presented in the theatre of the Brompton Museum.

Mr. A. Beresford Hope presided; and there was a numerous attendance of artisans and others interested in decorative art.

The Chairman observed that the present was, without exaggeration, one of the most gratifying, if not the most gratifying, of the many occasions which brought them together in that building. Many societies were formed for the purpose of social intercourse, to see and be seen, to be complimented and to compliment, to read instructive papers, and so forth. These were all worthy objects in their respective lines; but there was something in this world higher and greater than complimenting or being complimented, and that was work—the hard labour of the mind and hand; and this work and hard labour of the hand and mind it was the object of the South Kensington Museum to promote. That institution was not only a museum and society, but it aimed at the realization of the old, emphatic word, a school—a place in which education went by precept and performance; and the sovereign way in which they taught by performance was to call upon their friends to come forward and produce the fruits of their instruction. They wished to show that, before schools of design came into vogue, there was a school of art-workmen. That school was established in no paltry or narrow spirit, for if Art was eternal and all-pervading, it must exist in the smallest as well as the largest affairs of life. The Venus, the Apollo, the Cathedral of Cologne, the Minster at Lincoln, were all grand illustrations of art in its most elevated forms; but a turned candlestick or a piece of embroidery were also illustrative of the same feeling and taste for the beautiful. There was no reason why workmen should not be artists in their respective gradations. The master of a cotton-mill might, in his sphere, be an artist, and so might the smallest boy who gathered the floss from the machine. He did not wish to derogate in the least from the credit due to manufacturers; but as there were master manufacturers, so there were master journeymen artists, who might attain to a high position in the cultivation of the beautiful. The workman might be an artist quite as much, as his scope went, as the most accomplished sculptor or painter. It was with the view of developing that art that the institution in which they were then assembled offered prizes for wood-carving, for metal-work, for moulding, and for decoration or coloration. In fine, they proposed to give prizes for those particular branches of art for which Michel-angelo, Giotto, and Quentin Matsys had made their names famous in all ages. With regard to the prizes awarded in respect of the year 1859, he had to report that eleven specimens of wood-carving had been submitted; one of which, however, arrived after the 1st of December, and was, consequently, too late for the competition. It would be satisfactory, however, for him to state, that although the design in question exhibited much ability on the part of the author, the work was not one to which the judges could have awarded a prize. The first prize of five guineas for a specimen of Gothic wood-carving had been awarded to Mr. James Allen, in the employment of Mr. Phillip, and now engaged at Exeter College, Oxford. It was a most praiseworthy work, but he was sure the author would not be displeased if he (the chairman) were to criticize it a little, and to say that the only drawback which he observed in it was, that it was rather too solid and stone-like—too rigid to be formed of so plastic a substance as wood. In all other respects, it was admirable, and true to nature. The second prize was also in the Gothic style, and was the workmanship of Mr. Charles Allen. The production was a sort of foliage very common in the early Middle Pointed age. It was executed in soft wood (the first prize carving was in hard wood), and its great merit was, that while it represented a well-known type, Mr. Allen had exhibited originality of feeling, and a graceful combination of foliage which could not be too highly applauded. The third prize (which they were enabled to offer through the kind liberality of Mr. S. C. Hall), was a panel in the style of the sixteenth century, and was the work of Mr. William Bayliss. The artist had not strictly adhered to existing specimens, as he had introduced, among his flowers, the fuschia, which was not known in England two hundred years ago. He also had succeeded in producing a graceful and delicate combination of foliage, which attested not only skilful execution, but a conception of art in its most elevated phases. The next prizes (given by the Ecclesiological Society) were for coloured decorations, of which nine specimens had been submitted in 1859 against six in 1858. The plan adopted, with reference to these productions, was to select a well-known panel, and offer it for coloration. The two panels selected on the present occasion, although consisting of one figure only, were very different in the character of their decoration. In one, the colours were subdued, and in the other positive. In one, no gilding had been used, while in the other it had been applied with a judicious, but a glowing hand. The judges had awarded the first prize to that in which the colouring was subdued. They were of opinion that there was a higher tone of art in a coloration which consisted of nothing but dull yellow, lilac, and chocolate, than in the more attractive medium of diaper and gilding. The first prize, therefore, had been awarded to Mr. Simpkin, and the second to Mr. Harrison, a gentleman who had taken a first prize last year. The judges were extremely pleased with both works; but, after mature consideration, they resolved to award the highest prize to the design which, in their opinion, exhibited the greatest artistic feeling. Now, with regard to the campaign for next year, he was happy to say, that the prizes which it was intended to offer for works to be executed in 1860 would be more numerous than those which had been awarded in respect of those sent in in 1859, and he trusted that the larger opening to be made would create a more numerous band of competitors. In former years they had given prizes for stone carving. Now, as they all knew, stone was an ugly customer to deal with. The workman

was obliged to bring the block home to operate upon in his leisure hours, and he need scarcely say that small flakes chipped off flying into one's eyes, and the larger ones through the windows, were rather inconvenient, and perhaps not encouraging. In order to get rid of these physical difficulties, it was proposed to give prizes next year to the three competitors who should prove themselves to be most successful in designing and executing a medallion in clay of the head of the Duke of Wellington, enclosed in a border of the Middle Pointed style. The prizes for these medallions would be five guineas, three guineas, and two guineas each. The next prizes would be for metal-work; two prizes of five guineas, and a prize of three guineas for the best specimen of a key in the Mediæval or Renaissance style. Prizes would likewise be given for wood carving, and the work to be executed would be a carved oak panel, to be used as one side of a church Bible binding. The ornaments, figures, or inscriptions were to be in harmony with the sacred character of the volume which it was to enclose, but with this exception, the utmost scope would be given to the genius of the artist, who would not be bound to produce a strictly original design, as an old type remodelled would be considered a compliance with the conditions laid down. A new prize of three guineas would also be given for a cartoon drawing (not coloured) of a painted glass canopy head for a figure such as was frequently seen in cathedral windows. A figure itself would not be accepted, neither would the use of colours be admitted. A prize of five guineas would be given for a coloured decoration, and the Ecclesiological Society would also give three guineas as a prize for the second best design. The specimen would be a group of two figures, and a cast of it would be supplied to competitors at a charge of five shillings each. Mr. Hope concluded by expressing his hope that these rewards would serve to stimulate art-workmen to aspire still higher, and to become more useful to themselves and to the age in which they lived.

The prizes having been awarded to the successful competitors, to whom the Chairman addressed a few words of congratulation and encouragement,

The Rev. J. D. Maurice said, that many of the workmen belonging to the institution, at the north of London, with which he was connected, would have been present but for the distance, which would have trespassed too much on their brief period of leisure. They were, however, fully sensible of the value of the South Kensington Museum, and more especially of its architectural features, and they felt that it was not only a credit and a source of usefulness to the neighbourhood in which it was placed, but to the whole of England. He was much gratified to find working men speaking out as he had heard them that night through their art performances. It showed that they were gradually entering more and more into the institutions of the country, that they were identifying themselves with its progress in art and civilization, and that they were standing forward to take that place in society which their intelligence and good conduct entitled them to assume. The reverend gentleman also added that a good many of his friends at the north of London had joined the rifle movement, and that the circumstance of that being a drill night also accounted for the absence of many of them. The zeal with which the working classes had come forward to join in the national plan of defence, which Her Majesty had that day so signally recognized, proved that the artisans of England felt, in common with their countrymen in the upper circles, that they had an interest in asserting the honour and independence of their common country.

Mr. S. C. Hall expressed the gratification which it afforded him to meet so many of those art workmen whose labour had so eminently contributed to improve not only the architecture of the age, but the public taste in reference to every-day objects. He owned that it had often occasioned him regret not to be able to ascertain the names of those whose heads and hands had produced so many graceful and artistic forms. When visiting that church at Doncaster built by Mr. Scott, which he had no hesitation in saying was, to his thinking, the finest specimen of ecclesiastical architecture which the last five centuries had produced, he had inquired in vain for the names of those who had executed the beautiful carving of the pillars. The name of the superintendent, it was true, had been mentioned, but he could not glean the names of those whose thoughtful heads and cunning hands had produced the works which elicited so much of his admiration. With regard to the growth of artistic knowledge among workmen, he was glad to say that an immense improvement had been effected in that respect within his own recollection. He was old enough to remember forty years ago, and he could not but contrast the limited knowledge which then existed with the power and excellence which now prevailed in almost every branch of manufacture. There was no reason why the beautiful in art should not be carried into the production of domestic and familiar objects. In his opinion, the man who designed a tea-pot or a saucer of graceful and artistic form was a public benefactor; and, in the same sense, the man who produced the abominations which too often meet the eye was as much an offender against public morality as the delinquent at the bar of the Old Bailey.

Mr. George Gilbert Scott said he wished to add a few words, in order to guard successful competitors against exaggerating the results of their success, lest it might act as a stopping-place instead of an incentive to improvement. People who were fortunate enough to obtain prizes were, as a general rule, too apt to rest upon their triumphs as a proof of their skill. It was to be hoped that the entire world of art was advancing; and if those who got prizes did not go on improving, they would soon be left behind in the race. There were several objects which might serve as the inducement to art-workmen to compete. In the first place they might wish to obtain more remunerative employment, which, however laudable in itself, was only a secondary and not a primary object. Neither was it by any means the object to single out individuals, and put them above their compeers. Emulation was no doubt an excellent incentive; but it was not desirable to put one workman in a marked degree above another. Neither should it be their object to give a positive stamp to their work as having attained to positive excellence, for in future years there might be absolute excellence. It must not, therefore, be considered that a prize was meant to be the stamp of positive merit. What those who gave the prizes wished was, to afford an incentive to future study and improvement. They did not wish that those who received prizes should say that they had attained to positive excellence, and that the fact of their having obtained a prize was a proof of it. The great and leading object of all competition was to encourage the student of art to renewed exertions in the path to excellence.

The Chairman then announced that the next lecture would be delivered on the 28th instant, by Mr. John Bell — the subject, "The Union of Sculpture with Architecture."

ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of this society was held on Friday last, at the house in Conduit-street, Mr. Penfold, president, in the chair.

Mr. Herring, honorary secretary, read the minutes of the proceedings of last meeting, which were then confirmed.

The president, in the absence of Mr. Thomas Purdie, read a paper written by him "On the Applicability of Fixed Mathematical Laws to the Production of Beauty in Architecture;" to which we shall return.

Mr. T. Rickman said, as the present paper was an attack on one written by Mr. Hay, "On the Harmonic Law of Nature," and which this gentleman had entrusted to him to read before the society in April last, he would make a few observations upon it. To apply a fixed mathematical law to all buildings was now out of the question, but, as some system was wanted to which architectural designs would conform, he thought Mr. Hay's the simplest for that purpose. This system was founded on the harmony of music, and required to be examined with great caution, as a theory which professes to deduce an analogy between musical law and mathematical dimensions must require a vast amount of mathematical knowledge from any one who sought to establish or attack it. Mr. Purdie's objection to Mr. Hay's theory was, that there was nothing in the eye to enable it to measure angles and mathematical dimensions, as there was in the ear to judge of the vibrations of musical chords; but an examination of the mode in which the eye is hung, of the formation of its muscles, and of the fibres by which these muscles were connected with the brain, showed that the mind was made acquainted with the proportions of a figure by a muscular action returned through the eye to the brain; but, as Mr. Purdie thought these proportions were set aside in perspective, he (Mr. Rickman) would instance an equilateral triangle. It could not be said that the eye would measure the circle which the triangle will recall to the mind of some persons, nor the square in which it is inscribed, nor the arithmetical ratio between its height and the width, nor the algebraical formula in which this ratio is stated. Undoubtedly, the mind seeking to store things for future use will resort to the algebraical as the simplest form to retain the impression of the triangle, but the difference between looking at it straight and in perspective is simply a difference of ratio in the width and height. If you look at the object straight, the rectile muscles of the eye are called into play; if in perspective, you must exercise the oblique muscles, and those which bring the eye to a focus at the nearer and more distant points: consequently, Mr. Purdie's theory, that there was nothing in the eye to appreciate these proportions, fell to the ground. He would observe, in conclusion, that these mathematical theories were worthy of attention, and were studied as classics, at the present time, in Modern Athens.

The Chairman observed that, in the case of the vibration of musical chords, the sound strikes the ear by a mechanical motion from the object, and the ear recognizes the motion in the drum; so that to hear requires the exercise of no faculty, whereas, in the case of seeing, the eye requires a faculty. Perspective was a stumbling-block, in his mind, to the reception of Mr. Hay's theory. Now observe a proportion; but, if you change your position in reference to the object, this proportion changes, and the eye seems to move in a different way, according as the object is ugly or handsome.

Mr. Hewitt, whilst agreeing with Mr. Rickman, thought that the question how or why impressions of beauty were conveyed to the brain from external objects was purely anatomical.

Mr. Brashill stated, that though an analogy existed to a certain extent between the organs of sight and hearing, yet that there was nothing in the vibration of musical chords correspondent to angles in buildings. The question how the impression of beauty arises is distinct from any anatomical one: we do not derive pleasure from sending our eye over a picture: we look at the picture as a whole: to do so the eye is adjusted as a telescope would be, and for the time being remains immoveable.

The meeting then broke up.

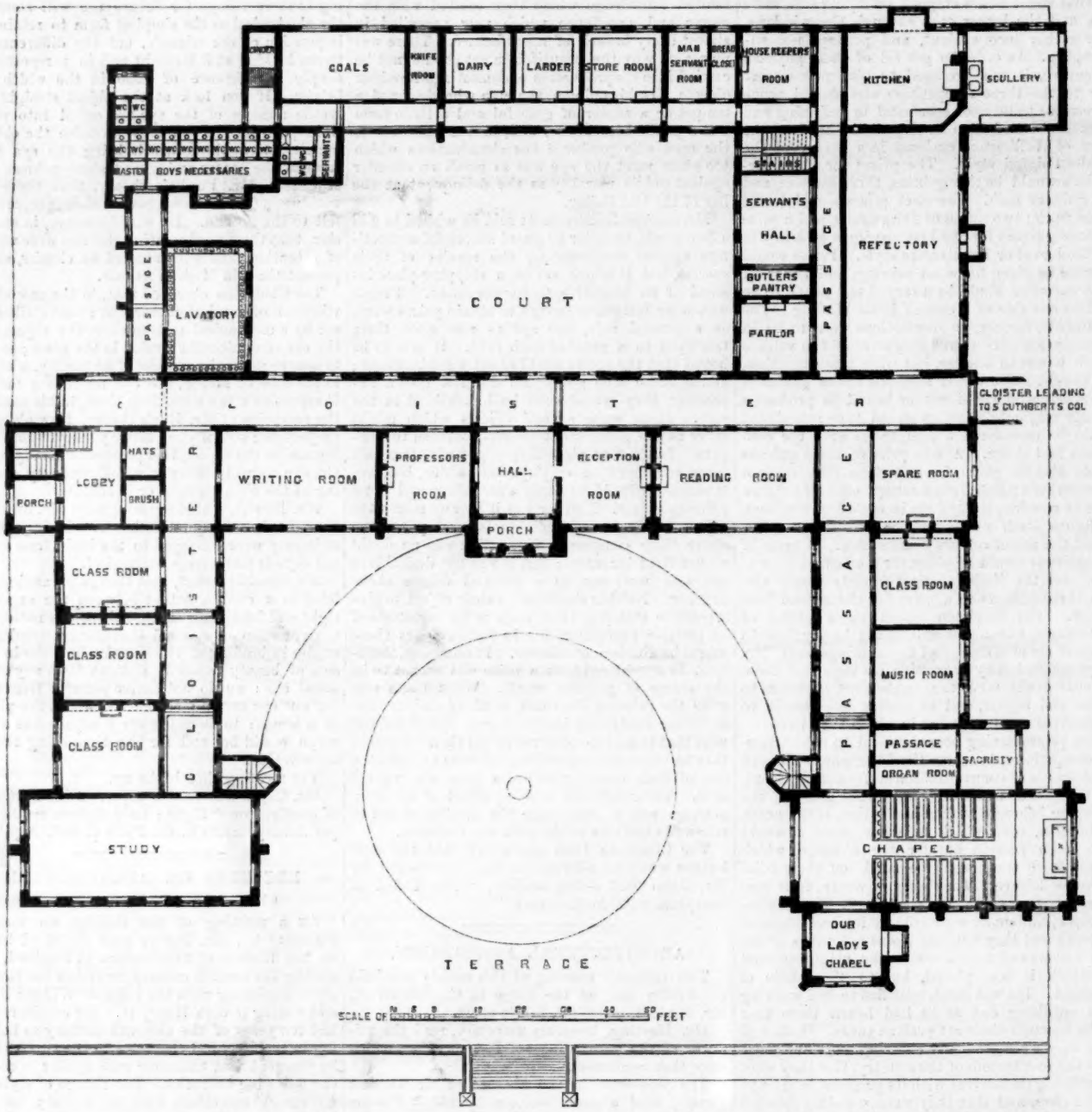
Mr. Capes will read a paper, on the next night of meeting, on "Light; its Influence on the proper Arrangements in the Plans of Buildings."

LECTURES ON ARCHITECTURE.

OXFORD ARCHITECTURAL SOCIETY.

AT a meeting of the Society, on Tuesday, February 21, Mr. Parker read his third lecture on the History of Architecture in England, comprising the twelfth century, or rather the Norman style, beginning with the reign of William Rufus, and ending it with Henry II. He considered the last ten years of the eleventh century as belonging in architectural character to the twelfth; and he observed that the same rule applies in each of the following centuries. The change of style was not exactly coincident with the century, but the last quarter of each century was a period of change or transition in style. He then explained the gradual change of style during the Norman period itself—from the heavy massive plain work of about the year 1100, such as the White Tower and the transepts of Winchester, to the comparatively light and elegant work of the time of Henry II., or about 1180, such as the Hall at Oakham, and the Galilee at Durham; and exemplified this by examining all the different parts of a building, and showing the gradual change which took place in each, the better workmanship, and the development of ornament; he included castles, houses, and churches, and showed the same progress in each. (1) Arches, showing by a model the mode of constructing a recessed arch, or an arch of two or more orders; at first square edged, then chamfered, then ornamented in various ways, and gradually developing into the succeeding style. (2) The pillars, at first of the same diameter as they are high, as at Westminster and in the crypt of Gloucester; these gradually increasing in lightness as much in crypts as in other parts, until in the latest Norman work they are six and even eight diameters in height, as in the crypt under Becket's crown at Canterbury, the Galilee at Durham, and the Hall at Oakham. The fashion of ornamenting the pillars and shafts was introduced in the time of Henry I., but became more usual in later work. (3) The capitals became gradually more enriched, and with deeper and better carving. Those of the early period are very plain and clumsy, and those of the eleventh century may generally be distinguished by a plain piece of stone projecting from the centre of each face, in the place of the canticoli of the classical capital, but never carved until the twelfth century. Late in the style, a close

ST. ALOYSIUS'S COLLEGE, USHAW.—*Ground Plan.*



imitation of the Corinthian capital is used, and then comes the change. (4) Doorways follow the same order; the deep, rich doorways are always late, very often inserted in earlier work. (5) Windows are very much the same as diminutive doors in the later period, in the early work they are small and plain. Round windows are not so common in England as on the Continent. Domestic windows are generally of two lights, while those of churches are of one light only, excepting in towers. (6) Early masonry is distinguished from late by the wide joints of mortar between the stones: in late work the joints are so fine as scarcely to be seen at all, as mentioned by William of Malmesbury, in describing the works of Bishop Roger, of Salisbury, about 1119. At Winchester, the work erected after the fall of the central tower in 1107, can be distinguished from the old work by the jointing of the masonry. (7) Surface ornament is used in the later Norman work, ornamental arcades included. (8) Sedilia are peculiar to England, and not found on the Continent; a few examples of this period were shown. (9) Mouldings and other details were taken in succession, and the gradual change illustrated by a great number of examples. (10) Norman keeps were the usual habitations of the nobility and gentry of the twelfth century in England, on account of their security, and houses were built in imitation of them in Scotland and in Ireland, and in many parts of the Continent, in disturbed districts, down to a very late period, sometimes as late as the seventeenth century. The Pell-towers of the border countries are diminutive Norman keeps. (11) Fireplaces and chimneys owe their origin to the necessities of the Norman keeps of the twelfth century. (12) The practice of vaulting was also partly introduced in them, and the staircases and passages were made in the thickness of the walls, as security against fires, where there were no vaults. (13) In churches the aisles only were vaulted, until about the middle of the twelfth century. Barrel-shaped vaults and groined vaults were used simultaneously, and equally early. Ribs were a subsequent invention after 1100. (14) Houses of this period, as distinct from castles, are only found in fortified towns, and are rare; but the few examples we have are very interesting, and it is in these that the tall round chimney shafts were first developed. (15) The great number of buildings of this period still remaining, made it impossible to enumerate them. The number of monasteries of the Benedictine, Cluniac, and Cistercian orders, founded about this time, enables us to fix dates with accuracy, as there can be no buildings before the foundation, and these serve as a test to compare with other buildings of the older foundations, which have been rebuilt.

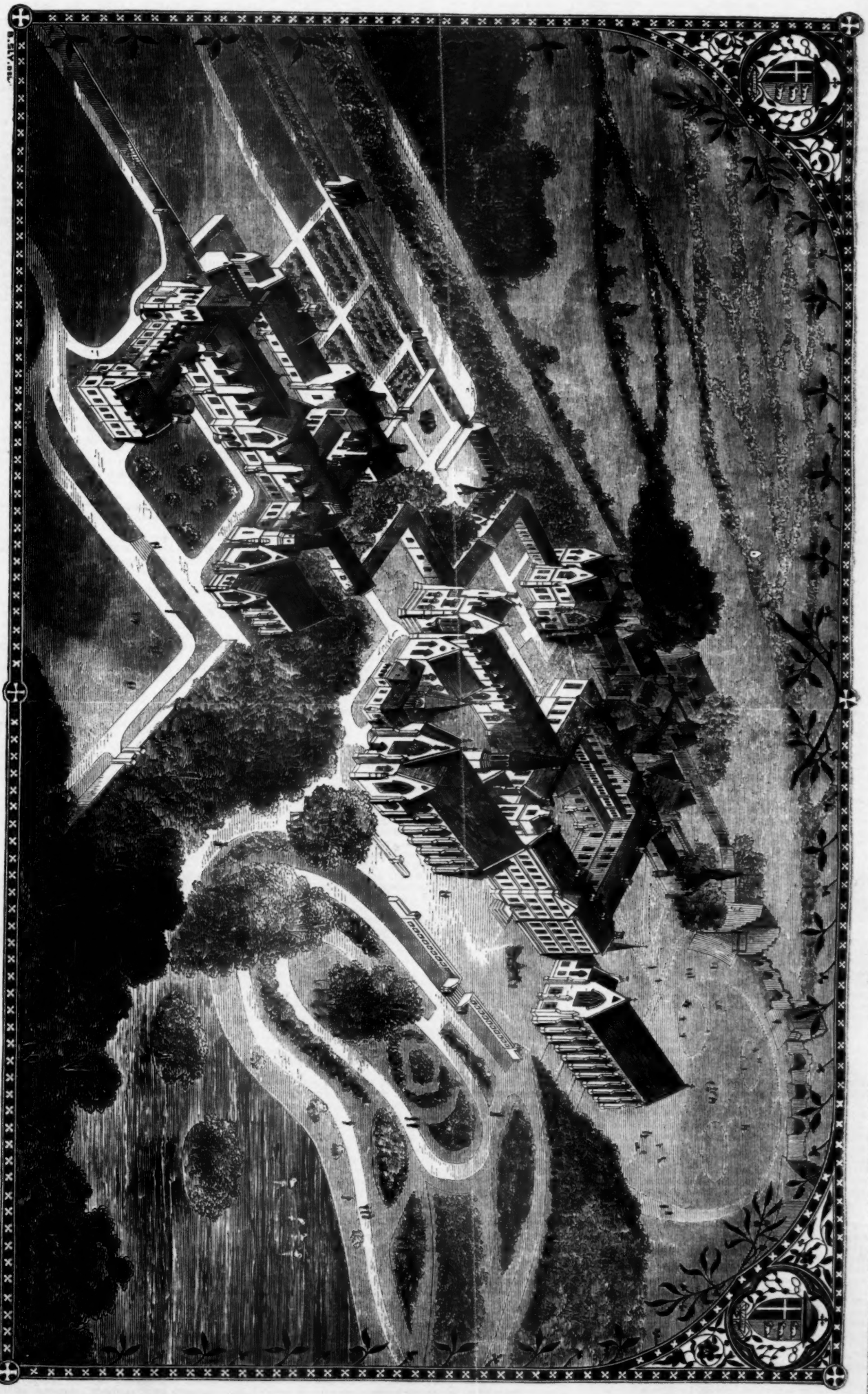
OPENING OF THE FLORAL HALL.

ON Wednesday night, in the Floral Hall, the Volunteers mustered, both little and tall; in uniforms red (the "6 feet" were they), and uniforms green and uniforms grey: there patroness ladies, ranged all in a row, showed bravery, beauty, its prize as we know; and gaslights and wax stretched the roof-lines along, and Gye looked contentedly down on the throng; while Barry, designer, Lucas Brothers, contractors, on their work gazed, complacent, and feared no detractors; though in truth we must say, and they'll not think us spiteful, if the doors had been larger, 't would have been more delightful; for brave volunteers, who are ever the best men, were forced against their will to be nothing but pressed men: still, sprinkled with roses and etched in with gold, no fault could be found with the glass vault so bold; and those who looked down on the floor of that hall, when the mass tried to move at music's sweet call (the moon shining glorious, above and through all), will not soon forget our brave Riflemen's Ball.

ST. ALOYSIUS'S COLLEGE.

THE college just completed was commenced in 1855, from the designs of Mr. Welby Pugin, who obtained the commission in a select competition. It is erected with coursed stone, which is found in the neighbourhood: the dressings are in sandstone, which is brought from some distance south of Durham. The college is provided with accommodation for ninety students, with provision for a full staff of professors; and though attached by a cloister to the college of St. Cuthbert, it is arranged as a perfectly separate institution.

PROPOSED MACCLESFIELD INFIRMARY. — We believe the good people of Macclesfield have fixed on a site for their new Infirmary. It is to be hoped they will make up their minds to have a building of the best kind,—one that will help to cure, not to kill.



ST. ALOYSIUS'S (R.C.) SCHOOLS, AND ST. CUTHBERT'S COLLEGE, USHAW, NEAR DURHAM.—MR. E. WELBY PUGIN, ARCHITECT.

ON THE SUPERINTENDENTS OF ENGLISH BUILDINGS IN THE MIDDLE AGES; WITH AN ESPECIAL REFERENCE TO WILLIAM OF WYKEHAM.*

AT Salisbury there appears to have been a "regular master of the works," although the nature of his duties does not seem to have been noticed by the historians of the cathedral of that city. In the agreement made with John the plumber, in 1367, at York, it was arranged that he, the plumber, was to work with his own hand wherever he should be required by the master of the fabric or by another on his behalf; and if at any intermediate time of the year the fabric should not require his labour or repairs, having first asked and obtained leave of the chapter or of the master of the work, he might lawfully work elsewhere: he was to return when required by the master of the work. At the same period there appears to have been a keeper of the fabric, who was to settle the amount of the day's work for the plumber and his servants, and who was to pay the salary at the stipulated periods. The master of the work, the keepers of the works, and the master mason are also all mentioned together in a document of the same period, so there is no chance of confusing them one with another. Henry VI., in his will, orders a payment of 50*l.* per annum as salary to be paid to each of the masters of the works at his college of Eton, and of King's College at Cambridge; with 13*l.* 6s. 8d. to the clerk of the works at each building. At the erection of St. George's Chapel, Windsor, Edward IV. appointed Richard Beauchamp, bishop of Salisbury, to the office of master and supervisor of the works, as I have already mentioned. This was in 1474; and in the will of this monarch, dated in the following year, he says, "We wol that the church of the said college begonne by us of newe to be buylded bee thorughly finisshed in all things as we have appointed it by the oversight and assent of the said Bisshop of Sarum during his liff, and after his decease by the oversight of the dean of the said collage for the tyme beeing, soo alway that our executours and supervisour of this our last wille and testament bee prive to all charges and expenses that shal bee expended about it." We can hardly imagine from this description that either this master or this supervisor had much to do with the designing of such works; yet, not only has the commencement of this magnificent building been always attributed to the genius of the Bishop of Salisbury, but the completion of it has been equally attributed to Sir Reginald Bray (who succeeded him, and appears to have finished the chapel at his own cost), but whom I do not any more consider to have been a designer of architectural works than William of Wykeham. It appears that Thomas Canceler was, in the early part, the clerk of the works; but the name of his predecessor is lost. This Sir Reginald Bray has also had, times out of mind, the credit of designing Henry VII.'s Chapel at Westminster, but he died some few months after the first stone was laid 24th January, 1502; and the king refers in his will, dated 1509, to the prior of Saint Bartholomew's, in Smithfield, as the then master of the works of the chapel, who had a picture, delivered to him by the king, of the manner in which the chapel was to be desked. This prior was William Bolton, who was himself a great constructor of edifices.

I have no other notice of this named officer for nearly 200 years, until so late as 1701, when Robert Streeter, painter, was master of the work to be done in the castle of Windsor, with the privilege of doing and performing the painter's work; from which it would appear that the meaning of the term had been altered equally with that of supervisor. This officer would seem to have held a very similar position to that of the supervisor, if not almost one and the same, and his duty evidently was to keep the accounts as paymaster; occasionally giving directions as to carrying out the works. I find that in 1671, in Scotland, Sir William Bruce is mentioned as "His Majesty's Surveyor," and also as "Master of the King's Works," being then engaged on the buildings at Holyrood House, near Edinburgh, executed 1670-9.

The keeper of the fabric, and the keeper of the works, are two titles which have been already mentioned in conjunction with the master of the works. The earliest notice I have found is appended to the names of Henry de Cerne, the treasurer, and others, at the Castle of Winchester, from 1222 to 1236, who are called Custodes Operationum. About the same period, Odo, goldsmith, of Westminster, held the same position at the Palace of Westminster, and numerous writs, as well to himself as to his son and successor Edward, show that they bought things for the use of the king, and had works carried out "which we had enjoined him to have constructed." This Edward, more especially, was appointed one of the treasurers of the new exchequer constituted for carrying out the rebuilding of Westminster Abbey. The keeper of the fabric of the church at Westminster had upwards of 3,000 marks paid to him in 1257, the period of its rebuilding. The keeper of the works at the Tower had 20*l.* paid to him to provide necessaries for the works, Master Thomas, of Saint Sepulchre, being overseer of the works aforesaid, and also called engineer of the king's warlings in the Tower. Our next keeper may not have been worthy of his office, if the following report of him be correct:—William de Wylughes, keeper of the old fabric of the cathedral church of St. Paul in London, received 40*l.* from the king for an iron tomb lately placed over the tomb of the Venerable Father Henry, late Bishop of London, purchased for the king's use for the tomb of Philippa, late Queen of England, within the Abbey of Westminster. The custos at the Palace of Westminster in 1332 was required to deliver up some lead which he had in his care. In 1350, the magister fabricæ of Lincoln Cathedral, was also the treasurer of Lincoln. But more especially from Brown's "History of York," published 1838-47, we obtain much valuable information. From the year 1311 until 1535—upwards of 200 years—there is a constant succession of keepers of the fabric: they all were receivers of the contributions for the works, and paymasters of the expenses. The rolls of accounts are kept in their names: one is called master of the fabric. But there is a curious incident connected with the three last persons who held the office of keeper, which most probably would not have attracted the attention of any one not pursuing this course of inquiry. These three were, Magister Christopher Seell, succentor of the Vicars Choral, and custos from 1515 to at least 1518, after which no fabric rolls are found until 1526, when Magister Thomas Marsar was custos until 1535. In 1525, however, Magister John Coltman, subtreasurer of the church, was custos, as known from the following circumstance:—that the adjoining church of St. Michael le Belfrey, belonging to the Dean and Chapter, was rebuilt in the time of Thomas Marsar, the second above mentioned, and there were, and there are perhaps still, existing in that church, three stained-glass windows to the memory of these three keepers, who, in the three inscriptions, are each recorded to have been "clerk of St. Peter's works" (not keepers of the fabric), and these inscriptions are in black letter English; therefore there can be no error except in the acceptation of the term in our modern usage of it. Neither need we forget that the person at present often in charge of carrying out works at our cathedrals still retains the title of the clerk of the works. From the quality of the persons above described, we might almost presume that the services rendered were somewhat akin to those of an accountant: the strange mixture of names and officers is most perplexing, and I fear I leave much that requires further elucidation.

See page 114, *ante*.

During the early years of the Mediæval period another title obtained, yet so rarely, that, but for the one name connected with it, I should scarcely have considered it of sufficient importance for introduction here. The name is that of Elyas de Derham, or Berham, and the office that of director or master. He is placed by Pugin along with Wykeham and others in his list of the best of the English Mediæval architects, on the ground, I presume, of the words by which he is commemorated, as the "rector" for twenty-five years of the new works of Salisbury Cathedral; at the same epoch, as we are told by the same authority, Leland, "Robertus Cementarius rexit per vigintiquinque annos." What shall be understood as to the real meaning of these words applied to the two men?—one, who was rector the ruler; and another who *rexit*, was the ruler also.*

About the same period we find that the works at Windsor Castle were placed under the direction of William de Burgh, who was succeeded by Walter de Burgh in 1240. This Walter was also keeper of the manor of Kenyngton (parish of Sunbury, in Middlesex), and there are numerous orders from the king for improvements and alterations; also for works at Brill, at Cliff, at Geddington; and he is likewise called "keeper of our demesnes." Under such a title, too, the monarchs were accustomed to appoint a person to each of the royal palaces for its care and preservation, often nominating some old servant to the office as a pensioner.

The last officer to be noticed on the present occasion is one perhaps as important as any of those to which I have yet requested your attention. This is the clerk of the works. I have already mentioned how, in an ecclesiastical establishment, the keeper of the fabric, in three instances, appropriated this title as well. We might almost conclude that the title was retained for use by royalty only, for it so happens that with two other exceptions this designation is not met in connection with any works other than those executed for the monarchs: one exception is on behalf of a member of the Royal family, and the other on behalf of the kingly Wolsey. The three instances above mentioned appear to show that another name was adopted for this clerk when in other establishments. The household of the monarch comprised an office for carrying out royal works. This fact would seem to have escaped the observation of all my predecessors commenting on the histories of the palaces inhabited by the sovereign, as well as by those who have investigated the history of this period. The earliest list of such an establishment which I have yet met with is that of Edward IV., whose reign comprised the years 1461 to 1483. The manuscript unfortunately is not dated. The clerk of the works therein has a fee 2s. per day, equal to 36*l.* 10s. per annum of the period; a clerk, for whose expenses he is allowed 6d. per day; also 4s. per day for riding expenses, and 20d. for boat hire. The next officer in the list is the comptroller; then follow the clerk of the engrossment of the paybook; the purveyor, with an allowance for his horse; the keeper of the storehouse; the clerk of the check; the clerk of the comptrollement; the carpenter; the plumber (the mason in this list is omitted); the joiner; the glazier; the surveyor of the mines, who has also 36*l.* 10s. per annum; and lastly, to my great surprise, the devizor of building, who has the same amount. The Society of Antiquaries published so long since as 1790 a quarto volume of "Ordinances of the King's Household," amongst which is one called the Liber Niger, from a manuscript of the period of Edward IV. Amongst these "Ordinances" is the following passage connected with the officer under consideration:—"Clerke of the workes, called by the noble Edward 'clerke dez œvres du Roy, preignaunt sa gages fees et lautres choises appurtenaunte à son office par l'assignement du Thesaurere d'Angleterre de hors le charge de l'oistiel du Roy.' This clerke hath no duetie longing to him in this houshold, by vertue of this office outward; but if he be appoynted by the soveraynes of housholde to take wages and cloathinge with the houshold, it mought cause hym to be the more attendaunt for necessary byldynges in offices in this house; and so he may take lyvery as a squier of houshold." The next list is not earlier than the time of Elizabeth. In these the clerk of the works has become the surveyor and paymaster, and surveyor and clerk. In 1614 Mr. Basill is the surveyor; and for the year 1610 there is a list of the household of Prince Henry, in which is the very acceptable name of "Inigo Joanes, surveyor of the workes:" the paymaster and overseer is Mr. Smith; and the clerk of the works, Edward Carter. We here obtain the modern acceptations of the words of office. Later lists of the royal household give the name of Inigo Jones, surveyor: Denham, later still, was surveyor-general: and Wren, surveyor of the works, is also known as surveyor-general. I must not now attempt to enter upon any of the numerous observations arising out of these very important lists, in the history of our profession, which exhibit the precursor of our modern board of works; but there is one title I cannot pass, namely, that of the devizor, who has the same remuneration as the clerk of the works. Many will remember the conjunction of this name with that of John of Padua, who is usually styled devizor of his majesty's buildings, on the faith of certain patents dated 1544 and 1549, granted by Henry VIII. and Edward VI.; but, on referring to the documents as printed, I cannot find the slightest mention of the word devizor; nor have I been able to discover the name of any person appointed to that office. Vertue or Walpole says, John of Padua's "office seems to intimate something novel in his practice. He was termed devizor of his majesty's buildings. In one of the office books which I have quoted, there is a payment to him of 36*l.* 10s." To this office book, however, he does not afford any clue; and were it not for the lists I have already quoted, I should have felt inclined to consider the whole as one of his mistakes. Dallaway, in the notes to Walpole in 1826, observes, that John of Padua "acquired a title not before that patent given to any architect;" so that he evidently was not aware of the lists to which I have referred.

I will now refer to the list which I have compiled of those who have held the appointment of clerk of the works. The earliest is in 1241, 25th Henry III., when directions were given for certain works at Windsor Castle being done by these officers: similar orders were issued in 1242 and 1244. During the erection of Caernarvon Castle, begun 1284, the clerk of the works was paid 8d. a day, and the master of the works 13s. a week, or 2s. 2d. a day, the Sunday not included. The Sunday, it appears, was paid for to such officers who had a yearly salary, as the accounts often mention the 365 days at the 6d. or 1s. per day. A lapse brings us down to 1316, when Nicholas de Tykhull, late clerk of the works at the king's palace at Westminster, was paid 14*l.* and upwards, for certain timber and planks used against the coronation of Edward II. In 1320, John de Ditton was appointed clerk and keeper of the king's works (this recalls the nomenclature of the officer at York) at the palace of Westminster and at the Tower of London. In 1326, William de Chaillou, who was acting as surveyor or supervisor, was appointed clerk of the works at both places, which also entailed the honour of looking after St. Stephen's Chapel, then erecting. About three years afterwards William de Kelleseye succeeded him. Both these clerks kept the accounts of receipts and expenditure. Peter de Bruges, in 1347, was clerk of the works at Westminster, whilst Weston was keeping the accounts at the Tower until 1351, when Robert de Campsale succeeded him at both places; and he was succeeded by Thomas de Stapelforde, who appears to have been acting previously as controller. In 1356 William de Lambheth was appointed surveyor,* and two years afterwards clerk of the works. In 1361 William de Sleford was also appointed surveyor,* and in the same year he was clerk of the works, whilst in 1365-6 he is termed clerk and supervisor, and was paid 1s. per day.

Returning to the year 1327, I find the constable of Windsor Castle directed to pay Ralph de la More, clerk of the works, an amount for wages at 2d. per day (as I have before stated, I consider this a mistake for 2s.). No other mention has been found of such an officer at Windsor, until 1361, when William de Mulsho was appointed clerk of the works at Windsor and elsewhere. After him we have Adam de Hertyngdon in 1366. In 1370 Robert de Sybthorp was clerk of the works at Shene, Eltham, and Rutherhythe; Henry de Mannesfield, at Childerlangley; John Edward, at the castle of Ledes; Richard Bernard, at the castle of Odyham; and Richard de Blore, at Quenesburgh Castle,—all royal property. I must not forget to mention here William de Wykeham's appointment, for five months only, at the manors of Heule and Yeshampsted in 1356. In 1382 Arnald Brocas was clerk of the works at Westminster, the Tower, Windsor Castle, and divers others of the king's castles and manors. In 1395 John Godmanston was clerk of the works of the king's Great Hall at Westminster, although Strype and Stow state that John Boterell was the clerk; but as there appears to be a slight error in the date of 1395 for 1397, he may perhaps have succeeded Godmanston. On the 12th July, 1389, Geoffrey Chaucer was appointed a clerk of the works, his patent mentioning not only Westminster and the Tower, but also Berkhamstede, Kenyngton, Eltham, Claryndon, Shene, Byflete, Childerlangley, and Feckenham. On a careful consideration of the life of Chaucer, by Godwin, I cannot find any circumstance to warrant a supposition that he was so eminently acquainted with building operations as to be qualified for the practical duties of the office: the short time he held it affords some grounds for the supposition that he had not the requisite knowledge; and the permission to appoint a deputy would also lead one to the same inference. The period, too, at which the office was given to him, strongly marks the favour of the king, bestowing on a favourite a gift for good services rendered. John Gedney, his successor, 17th June, 1391, also appears to have been allowed to appoint a deputy; and he is the first clerk of the works I have found recorded as having had a certain quantity of cloth given to him for a livery. In 1407 this officer was Henry Merston, who also had a livery. From 1411 to 1413 Robert Rolleston's name is met with as acting at Westminster and the Tower. He was succeeded by John Straunge in 1413, who is recorded to have received his livery in 1416, and as being engaged at Shene Palace in 1413 and 1418. In 1422 John Arderne held the office. In 1440 William Lynde, as early mentioned herein, was clerk of the works at the College of Eton. In 1445 William Cleve, "the king's poure chapeleyn," petitioned for the payment of 1,600*l.* for works done at Eltham, Shene, Westminster, and the Tower. John Canterbury was clerk of the works at the commencement of the erection of King's College chapel, Cambridge, in 1451, having previously been engaged at Eton as Lynde's successor. In 1474 Thomas Canceler held that situation at Windsor, where he had 10*l.* per annum and a livery: in 1483 his accounts were ordered to be determined. In the early part of the reign of King Richard II., Thomas Hunt was appointed clerk of the works for life; and in 1484 Thomas Danyell is named. A lapse of some sixty years brings the date down to about 1550, when Eustace Mascall was clerk of the works to Cardinal Wolsey at the building of St. Fridiswide, in Oxford (this is one of the exceptions in the use of the title), and who was for seventeen years chief clerk of accounts for all the buildings of King Henry VIII. within twenty miles of London. From 1555 to 1558 Richard Woodward is named as the "clearke of the honor and castle of Windsor." And lastly, in 1575, Humfry Michell, the clerk of the works at the castle, asks leave to resign his office on account of the difficulties and opposition met with in discharging his duties, and the delays in procuring money and passing his accounts. Most probably he was acting as the clerk of the works as now understood. The effects of this remonstrance appear to have been his appointment as superintendent of all payments for repairs done to the castle, under a warrant from the constable, the Earl of Leicester, who at the same time nominated Henry Hawthorne to be surveyor of the works. The salary of each of these officers was 2s. per day. There is much similarity in the office held by Wykeham to this appointment of Michell, as superintendent of all payments for repairs done. In this case, however, Michell was under the constable: in Wykeham's case, by his second appointment, Wykeham was also the constable, "capitalem custodem et supervisorem."

The second exception, which I mentioned at the beginning of this division, comes under the date of 1435. The

* Some other references to him as a director will be seen in the Winchester volume, to which allusion has already been made.

* Or Supervisor?

clerk of the works is once named in the contract for the erection of Fotheringay church, for the Duke of York, in the paragraph,—"And yf so be that the seyd Will. Horwode (the freemason or builder employed), mak nought full payment of all or any of his workmen, then the clerke of the werke shall pay him in his presence, and stoppe als mykyll in the seyd Will. Horwode hand, as the payment that shall be dewe unto the workemen comyth to;" clearly showing what was at least one part of his duty.

Among the foregoing observations will be found, I think, an elucidation of some points hitherto generally considered obscure. The salary of the clerk of the works has been considered exceptional, whereas I have shown that it existed for many years, and at nearly the same amount. Sir Christopher Wren received 45*l.* 12s. 6d., the usual fee for the office of surveyor-general being, for himself, at 2s. a day, and a clerk at sixpence a day,—a sum now equivalent to about 150*l.* If I mistake not, it has always been considered that the livery of this royal officer (withdrawn temp. Charles I.) was first given to Inigo Jones, whereas it was a customary present some 150 years previously; and at the burial of King Edward VI., the surveyor of the king's works had seven yards of cloth, and each of his three servants three yards.

There is one circumstance respecting nearly all these officers which, perhaps, needs a passing comment. It will have been remarked how very many of them were either ecclesiastics or were rewarded with ecclesiastical preferment. But it must be remembered that, during the period to which our attention has been confined, the church was the only field for exertion open to those of the nobility and gentry who were not inclined to embrace the profession of arms, and also a means by which to obtain remuneration for a livelihood; therefore the clergy, so called, would thus secure the offices at the disposal of the monarch and of the nobility. Some few, however, of those thus employed appear to have been unconnected with the church.

It is very difficult to understand clearly the duty of these officers. The overseer would be, perhaps, the most easily explained; but his Latin designation, as used in the Records, is unknown to me, unless the Latin word "supervisor" has been the one our translators have found. The English word "supervisor," if that of steward be questionable, is, I think, best kept for those who, acting on behalf of others, as Wykeham for the monarch, have yet no grounds to be considered the designers of the building. The master of the works, a designation used in the monastic establishments, whilst in Scotland it took the place of the English king's chief professional man, was, I feel certain, one of the talented advisers of the day. The English king's clerk of the works clearly stood in the place of the architect. The master or keeper of the fabric was, probably, the keeper of the whole structure; and the keeper of the works was, perhaps, only the custodian of the particular works then in progress; the edifice, under these circumstances, being developed by the master of the works, or by the master mason, to the latter of whom I may, perhaps, be permitted to return on a future occasion. But there is one title in the list of the royal establishment of whom we should desire to know much, but of whom, at present, nothing whatever is known; I mean the devizor of buildings.

Postscript.—Whilst this paper has been in course of printing, my attention has been directed to a passage in Hunt's "Tudor Architecture," 1835, p. 24, who states that "it appears, indeed, that in those times the 'devysor of the works' acted invariably under a supervising officer, who, leaving the artist's fancy and genius unshackled, controlled and restrained the expenditure of money." This latter is exactly the position held, I consider, by Wykeham at Windsor. Also, that "it was common to depute the superintendence of buildings to churchmen, from an idea of their superior prudence and probity," quoting Warton ("History of English Poetry," 1774-81), who also states that Wykeham "is supposed to have recommended himself to Edward III. by rebuilding the Castle of Windsor. This was a recent and notorious instance" (alluding to Wicliffe's Sermon, and see previous note). "But in this appointment," he continues, "the king probably paid a compliment to that prelate's singular talents for business, his activity, circumspection, and management, rather than to any scientific and professed skill in architecture which he might have possessed. It seems to me that he was only supervisor or comptroller on this occasion." "Mr. Dallaway," adds Hunt, "without mentioning his authority, says the name of Wykeham's superintending architect was William Wynford. Assuming this to be correct, Warton's is a fair inference." So that I have not the merit of originating the suggestion, "Was Wykeham an architect?" Whereas, "it is to be lamented," writes Gwyn, in 1766, "that Wykeham did not pay more regard to the science to which he owed the greatness of his fortune, by establishing a foundation for the study of his own art, and others that depend upon it. Had he fortunately done this, there is no saying what the consequences might have been: possibly by this it would have been the fashion for ingenious men to come from Rome hither to perfect themselves in the arts, and have bartered Italian for English performances."

DRINKING-FOUNTAIN MOVEMENT.

AT Shrewsbury, the Fountain Committee report on two models of drinking-fountains, prepared by Mr. Hollins, of Birmingham, at the request of Viscount Newport, M.P., and either of which his lordship has offered to have executed at his cost, and erected in the town;—the one, a stone structure, of a Classic design, containing a centre fountain, and also four drinking-fountains; the other, a mural fountain. The committee unanimously preferred the former one, recommending that it should be erected by the corporation in the Market-square.——At Falmouth, Mr. David Barclay, of Grove-hill, has made arrangements for the erection of a fountain near the Custom House. The fountain is now in course of preparation at Messrs. Freeman's granite works, Penryn. ——At the Bradford Council Board recently, it was stated that there had been four or five applications from various gentlemen to erect drinking-fountains, but the Street and Drainage Committee had considered that they could not determine the sites until they had all the designs before them. It was also stated that two designs—one from the Beaumont Testimonial Committee, and another from the Band of Hope—would be presented to the Street and Drainage Committee. The Beaumont Testimonial Committee have not yet selected a design for the fountain to be erected to commemorate the services rendered to the borough by the late Mr. Alderman Beaumont. Several designs were sent for inspection. A design was forwarded by Mr. E. Milnes. The height of the whole, from the pavement to the extremity of the lamp, is about 26 feet. The style of architecture is Italian Renaissance. Two designs were also sent by Mr. T. C. Hope, one of Gothic architecture, about 27 feet in height. The second is of Italian architecture, height 25 feet. Each of these designs will cost more money than the committee has been able to raise up to this time.

THE HULL SURVEYORS.

ACCORDING to the statements made at the meetings of the local Board of Health, the differences between Mr. Marillier, the surveyor, and Mr. Butler, the assistant surveyor, have reached such a pitch that they correspond in writing as strangers, and the business of the town suffers. Some of our correspondents ascribe it to the fact that the assistant surveyor's plan of drainage was accepted in preference to that of the surveyor. A committee has been empowered to inquire into the differences; but the right constitution of the committee is questioned.

BASINGSTOKE BUILDING COMPANY.

COMPETITION.

DESIGNS having been sent in, in compliance with particulars advertised in the *Builder* by the directors, the premium has been awarded to Mr. G. B. Mussellwhite, of Basingstoke.

The designs submitted by the successful competitor comprehend perspective views of two villas in the so-called Italian style, and one in the Elizabethan style of architecture, together with a "bird's eye" view and block plan giving the houses a south aspect with the frontage to the town; also a block plan giving the houses an east aspect, with the frontage to Reading road. The preference has been given to the latter arrangement.

One of the Italian villas has been selected for erection at a cost not exceeding 1,200*l.*

IMPROVED GAS CHANDELIER.

MR. HUGHES, of the Atlas Works, Hatton-garden, has recently patented improvements in sliding chandeliers for gas, to remedy the defects that exist in chandeliers constructed upon the old principle.

The ordinary mechanical arrangement, by which the body of all sliding chandeliers of the old principle is sustained, and made to slide upon the upper or supply-pipe, is by means of small brass chains, to the end of which are attached the counterpoise or balance weights: these chains, from repeated exposure to a heated atmosphere, containing a portion of carburetted hydrogen, become rotten, consequently break, and allow the weight to fall.

The improved counter-balance is in one circular piece (as a coronal); and if one or two chains break, it still remains suspended; and should all the chains break simultaneously (a very unlikely occurrence), it then falls upon the body of the chandelier, and brings into action a valve and stop, which immediately shuts off all escape of gas. Another advantage is also obtained, namely a longer slide, so that the light can be lowered to the table within the height of any ordinary lamp.

MACHINE-MADE NAILS.

THE manufacture of wrought-iron nails by machinery, instead of by hand, was, as has often been the case, stimulated by the continued strikes of the nailmakers. The problem of furnishing the market with machine-made nails, capable of competing with those forged by hand, was first solved by Messrs. Ewbank; and these nails have now become a regular staple of English commerce, and are as punctually quoted in the colonial price-lists as any other article of British export. This success has recently led to the production of another patent process for the accomplishment of the same object, which is now in the hands of Messrs. Halkett & Bates, of Manchester, who are at present supplying the London market, through their agents, Messrs. Richards & Co., with machine-made nails.

The patent wrought nails claim to be superior to those made by hand in this respect, that the head, being made at the same stroke with the remainder of the nail, is not liable to break off when hammered even into the hardest wood. Another advantage is, that the full count is always found to go to the same weight of nails, they being more regularly and accurately made by machinery than by hand. Not having had large experience of these nails, we simply bring the fact of their manufacture before our readers.

THE BRADFORD WATERWORKS.

THE corporation of Bradford (Yorkshire) some time ago purchased the works of the company by which water had been supplied to the town theretofore, as also the privilege of carrying out a scheme for a very large extension of the works, for which the old company had obtained the sanction of Parliament. The scheme was designed by Mr. J. W. Leather, for the water company, and the corporation have retained his services for carrying it out. The corporation have taken power to borrow in the whole a sum of 650,000*l.* They paid 40*l.* for every 20*l.* share of the stock of the original company, and took also the whole of the company's liabilities. The new scheme, with the mains and distributing apparatus, was estimated to cost upwards of 300,000*l.* The larger reservoirs, tunnels, and other works, were let at the end of 1856, and are now approaching completion, when Bradford will have 10,000,000 gallons of excellent water daily. The engineer's estimate for contract M, recently let, was 13,800*l.* The work was let to Mr. John Metcalfe, of Bradford (whose tender was the lowest), for somewhat less than 13,000*l.* There were also tenders from Messrs. Barton & Son, Shipley; Mr. T. Gowing, Ripon; Mr. S. Buxton, Hunslet, near Leeds; Messrs. Moulson, Bradford; Mr. Ingram Lapish, Shipley; and Mr. J. Taylor, Clitheroe. The highest tender was 16,200*l.*: there were, besides the highest and the lowest, one for 13,200*l.*; another, 13,500*l.*; another, 13,586*l.*; another, 14,100*l.*; and another, 14,131*l.*; the average of the whole seven being about 1 per cent. over the engineer's estimate.

BISHOP AUCKLAND TOWN-HALL AND MARKET COMPETITION.

WE mentioned last week the award of the first premium in this competition. We may add that twenty-three architects competed. The design by Mr. Hill, of Leeds, was second in favour. The secretary states that the Northern Architectural Association (which lately protested against the terms of the competition), "was represented by four or five of the members, among whom was one of the highest officers of the Association. The successful design will not be adopted in its entirety, but will undergo some modifications."

CHURCH-BUILDING NEWS.

St. Ives.—The following tenders for the erection of new entrance-lobbies to and re-seating the Wesleyan chapel were received:—

	Seats in Deal.	Seats in Oak.
Mr. Skeels, St. Ives	£396 0 ..	£464 0
Messrs. Ibbott & King, Somersham	322 10 ..	387 10
Messrs. Thackeray & Son, Godmanchester	297 10 ..	360 0
Mr. Saint, St. Ives	260 0 ..	330 0
Mr. Allpress, Broughton	258 0 ..	328 0
Mr. Wheatley, Bluntisham	245 0 ..	293 0
Messrs. Smith & Saint, Hemingford	229 0 ..	259 0
Messrs. Allen & Smith, ditto	196 0 ..	226 0

The lowest tender was accepted, and the contract signed. The work is to be commenced immediately. Mr. Robert Hutchinson, of Huntingdon, is the architect.

Basford, near Nottingham.—Last week the church of St. Leodegarius, Old Basford, near Nottingham, was reopened after its restoration. The ground-plan of the church is the same as before, with the addition of a vestry at the east end of the north aisle. The tower, clerestory, north aisle and porch, with the roofs throughout, are new, and built in the Early English style, to correspond with the nave arcades and chancel, the oldest parts of the building remaining. There are low open benches inside, and elbow-stalls in the chancel; and the pulpit is of Caen stone, carved. Mr. Arthur Wilson, of Nottingham, is the architect; Mr. Garland, of, Nottingham, the contractor; and the works have been carried out at a total cost of 3,000*l.*

Kinstone (Staffordshire).—In consequence of the dilapidated and insecure condition of the parish

church at Kinstone, in the county of Stafford, and of the inadequate accommodation it affords for the wants of the neighbourhood, it is to be taken down and a new church will be erected upon a larger scale. The present building consists of a nave and chancel, probably built in the thirteenth century, to which were added a modern transept and tower about fifty years back. The windows of the chancel on the north and south sides are the only ones in which the original stonework appears, and they will be re-used in the new chancel. The proposed church is to be built in the Early decorated style of Gothic architecture, and is to consist of a nave, north aisle, and chancel, with a tower and spire at the north-east angle of the nave. It is intended to accommodate 300 persons. The Earl of Shrewsbury and Talbot, being the principal proprietor in the parish, is the largest contributor to the funds, and also gives land adjoining the present churchyard for a new site. Mr. D. Brandon is, we believe, the architect. It is also in contemplation to build schools for 250 children, with an attached residence for a school-mistress.

Gloucester.—Mr. H. Evans, of Highgrove, is about to place a window in the nave of Gloucester Cathedral, according to the *Chronicle*, in memory of deceased members of his family, making the fourth within a year; and it is anticipated that a fifth will be commenced before the two already decided upon have been completed. It is proposed that the designs of these windows shall represent events which have occurred in the building, and thus illustrate its history; and the new windows will aid this design. The paper named suggests that the two western windows should be converted into memorials of two of the worthies of the diocese—Bishop Warburton, the scholar, and Bishop Hooper, the martyr. Messrs. Bell and Clayton have been selected as the artists of the Evans window.

Rumney.—A correspondent of the *Cardiff and Merthyr Guardian* (Mr. E. A. Freeman) says:—"I expressed to you my fear that the repairs of the roof of Rumney Church would lead to the loss of one of the architectural antiquities of the neighbourhood. The old roof has now been wholly destroyed. No architect, as far as I know, was called in to examine. An entirely new roof, of the very poorest kind, has been put up: even the old pitch has not been followed: the new one is much lower, and the eastern gable of the nave has been lowered in proportion. Within, the roof is a mere ugly piece of carpenter's work, with two beams, queen-posts, and very thin rafters: without, it is covered with blue slabs. The pews, some of the worst anywhere, and wretched tumble-down things to boot, are now all moved out of the church. If they are put back again, Rumney will become even more a by-word than it is already likely to become on account of the roof."

Holmer (Hereford).—The parish church of Holmer, near the city of Hereford, is about to be repaired and freed from the disfigurements which at present mar the general effect and diminish the amount of accommodation within its walls. The tower has been repaired, and a vestry erected at the west end, which has been restored. Mr. J. H. Evins is the architect, and Messrs. Morgan and Price are the contractors. Tenders will shortly be received for the work of restoration and repewing of the whole of the church under the same architect.

BLACKBURN UNION WORKHOUSE COMPETITION.

IT will be remembered that we reviewed the designs sent in competition for the Blackburn Workhouse. Three architects were selected to compete a second time, and one of the conditions sent to them was that the successful competitor should be appointed to carry out his design; but, it went on to say, at 4*l. per cent. commission.* Some, if not all the competitors, replied, acknowledging the receipt of letter, conditions, &c.; pointing out the clause as to commission, and expressing conviction that on reflection the Guardians would consider the successful competitor, whoever he might be, would, after such a severe competition, be fully entitled to at least the usual commission of 5*l.* per cent.

Designs were afterwards sent in, and one by Messrs. J. E. and J. D. Oates, of York, architects, was accepted. They have since been called upon to agree to accept 4*l.* per cent. commission, and that the Guardians shall appoint a clerk of works. They naturally object, and ask 5*l.* per cent. commission, and that they may nominate a clerk of works for the approval of the Guardians; his salary to be paid by the Guardians over and above the 5*l.* per cent. The decision is adjourned until this Saturday. One of the Guardians, it appears, insists that the usual practice amongst architects is, that if 5*l.* per cent. be paid, the architect out of it pays the clerk of works!

We hope he will believe us when we say he is in error; and that, in conjunction with his brother Guardians, he will agree to pay their architects the fair and customary charge of 5*l.* per cent. As to the appointment of clerk of the works, Guardians who are wise will leave the responsibility in the hands of their architect.

FALL OF RAMSAY TERRACE, EDINBURGH.

ON the 1st inst. the terrace erected by the late Lord Murray, on the slope of the Castle-hill at Ramsay-gardens, and which has been gradually yielding, gave way altogether. It is about three years since the erection of this terrace was commenced. At the east end was erected a lodge, and at the west end the terrace curved outwards; and in the centre of the circle had been placed a pedestal, which was to receive, as soon as ready, a statue, by Mr. Steell, of the poet Allan Ramsay, from whose patronymic the locality derives its name. The terrace was supported by a massive buttressed wall, 30 to 40 feet in height, built on a slight inward angle, while the space between the original slope of the hill and this wall was filled in with an embankment of earth. The foundation of this artificial mound and wall would now appear to have been insufficient. The superstructure is, we are informed, set upon a stratum of clay, which ought to have been built *into* and not *upon*. From the opposite point of view, we see the terrace as if it had fallen askew to the westward, the lines of the masonry, which are to a great extent traceable, being broken and twisted, and set on angles that make the vision giddy. Masses of stone have been confusedly hurled into the garden below, while the sloping ground is gaping with chasms, and seems as if upheaved by some volcanic agency. From the top of the fallen mass the scene of ruin is still more disastrous to behold. It must be matter of great regret to the public to view the destruction of this terrace, which cost the late Lord Murray, we believe, six or seven thousand pounds.

REMARKABLE BUILDER'S TRIAL IN DUBLIN.

THE action touching the fall of a house in Grafton-street, Dublin, viz., Kempston *v.* Butler, a builder (alluded to on page 141), after being five days at hearing in the Court of Common Pleas, and before a special jury, resulted in a disagreement,—*six* being for a verdict and *six* against. The main points of consideration were, did the house fall owing to the negligence or incompetency of the contractor? Did he take precautions for necessary shoring, bracing, and strutting—during the progress of the re-building—of adjoining premises? Was he, by the custom of the trade—and without a special contract to that effect—bound to prop up adjoining houses? and, by same alleged custom, did he incur responsibility in failing so to do? Numerous witnesses were examined on both sides. The professional men for the plaintiff were Messrs. Louch, J. S. Butler, J. J. Lyons, and Courtenay, architects; Donnelly, Murphy, and Nolan, builders; and for the defendant, Sir T. Deane, Jacob Owen, Wilkinson, and Carson, architects; Norwood and Leech, builders, besides plaintiff and defendant personally, and various other parties. Plaintiff's witnesses chiefly deposed to the right and responsibility of a contractor undertaking to rebuild a house to shore up effectually adjoining premises, also to the "custom" in the absence of special contract; that the measures adopted by the defendant were insufficient, and that owing to *his* fault the house fell; that the divisional wall was a party-wall. The witnesses for defendant maintained that there was no custom,—which, however, on cross-examination Mr. Wilkinson admitted;—that the fallen house had been in a dilapidated and insecure state, beyond the power of propping up with any amount of ordinary caution after the lateral support was withdrawn; that it had been tampered with by injudicious alterations; that bad weather was the immediate cause of its fall; that the wall was *not* a party-wall, and that all that could be done *was* done by the defendant. The Chief Justice (Monahan) in summing up remarked, that the evidence was most conflicting; that the jury should consider if the *custom* had been fully proved; and, if so, had the defendant done all in his power to prevent injury to adjoining houses? and were the precautions such as he should have taken? Was the house in that state of insecurity as to render *effectual* propping impracticable? After the utter impossibility of the jury agreeing to a verdict had been announced, one of their number (Mr. Alex. Parker) suggested, that as the case involved such serious considerations to both parties, the jury would, by permission of the court, constitute themselves into a committee of arbitration, with a view of effecting some amicable arrangement and prevent further litigation; to which his lordship readily assented, and complimented the juror upon the good taste and judgment displayed by his suggestion. The plaintiff's counsel also assented, but the defendant's dissented, observing that he would stand on his right on the law of the case. Serjeant O'Hagan (now Solicitor General) and Mr. Armstrong, Q.C.s, with Dr. D. C. Heron, were counsel for the plaintiff; and Serjeant Fitzgibbon, Messrs. M'Donagh and Brereton, Q.C.s, with Messrs. Echam and Osborne, were counsel for defendant.

FALL OF A SCHOOL BUILDING IN STOCKPORT.

DURING the prevalence of the high wind on Tuesday in last week, a day-school, in connection with the Wesleyans, 84 feet long by 30 feet, was destroyed, killing one child and wounding seven others: 420 children were in the school, and miraculously escaped. At the inquest which was held, on the 1st inst.,—

Mr. James Wilson, of Bath, architect, gave evidence, to the effect that he prepared the plans for the schools, and forwarded them to Government. He estimated the cost to be about 2,600*l.*; and for that amount, the plans for this building could be well and judiciously carried out. The contract for the school alone was let to Mr. Warburton, of Manchester, for 1,919*l.* 16s. 8d.: that for the whole work was 2,606*l.* Saw the building occasionally while it was being erected;—last saw it when it was completed;—before that saw it when the roof was covered in. The committee appointed Mr. Hunt to see the building practically carried out, according to the plan: witness was only applied to for his certificate, for money to be advanced upon the work as it proceeded. Was expected to see that the plans were carried out in an architectural point of view. According to the specification, the walls were to be 18 inches thick, without the buttresses, from the plinth course to the roof. The width of the buttresses, including the wall, was 5 feet at the bottom, and at the top 3 feet 6 inches thick. The walls were to be built of brick, faced with Yorkshire stone. The breadth of stone on the bed of the boundary walls was not stated in the specification. Would think 4 to 6 inches, with binders, would be a fair breadth for a building of that description. The contract stated that the walls were to be properly bonded together, without defining the exact walls, leaving it open to the clerk of the works: the reference is to the inside walls. Those walls, to be properly bonded, were to be so every 10 feet, each course, the wall length. The inner walls to be of brick, filled up with rubble stone. That was the original specification, but by agreement it was to be backed up with brick. There is nothing in the contract to show that the lining should be bonded to the outer wall. The wall was to be 18 inches wide, properly bonded. Have examined the building this morning. The height of the roof, from the eaves to the ridging, was to be 26 feet, and the width of the span is 29 feet, by 30 feet long. The length 84 feet, from gable to gable, by 28 feet. There were eleven principals and two halves. The strength of the timber is specified. The collar pieces were to be 9 inches by 5 inches; king post, 9 inches by 3 inches; pullins, 7 inches by 4 inches; common rafters, 4 inches by 2 inches; wall plates, 9 inches by 4 inches; intermediate principals, 9 inches by 3 inches;—to be covered with blue Carnarvon slate. If the walls had been properly bonded together, the timber was sufficiently strong to support a roof covered with 40 tons of slate. Saw the roof after it was put on, and approved of it, after a few suggestions to Warburton, the contractor, had been done. His clerk came over two or three times, and measured the work. Had not heard, until this morning, that the roofing had been nearly blown away on a previous occasion. Made an examination of the building this morning, and am enabled to say that the fall of the chimney, having made an opening in the roof, allowed the gale to be introduced, and acted on the opposite or east side of the roof and wall. Should think the upper part of the easterly wall had swagged a little, causing the roof to be dislodged from the corbels, and thus let it down. The walls, as far as he could say, judging from what was remaining, are substantially built, but not sufficiently bonded. The outside casing has left the inner wall entirely. The separation would be caused by the want of bonding or defective mortar, though the upper portion of the back wall appeared as if they had been carried off separately. The walls, as a matter of science, even if they had been properly mortared, or were of strength, could not have resisted the wind after it got in: outside, no gale could have touched it. If it had not been for the opening at the base of the chimney, the building would have resisted the gale.

By the Coroner: The great benefit to the workmen would be to leave out the "ties," because they could get better on with their work, particularly if one part was carried on without the other. There appeared to be want of adhesion in the mortar.

Mr. Marshall said, Mr. Hunt offered his services to superintend: he attended at the commencement of the works, but latterly he, as one of the trustees, appointed Mr. Beeston at 1*l.* per week for his services, which were returned to Mr. Hunt. But Mr. Hunt was not officially appointed, nor was he considered responsible.

Mr. John Whittaker, builder, said he had examined this building, and found that the walls had not been sufficiently bonded. This wall, as left by the contractor, was not sufficient to resist the fall of the roof, notwithstanding the fall of the chimney. The roof and gale would have thrown a stronger wall over. The weak points in this wall were where the glazed bricks terminated and the others began, which would be from five to six feet from the upper floor.

The mortar has not a sufficient quantity of lime in it, neither is the sand of the specified quality, being loamy. The timbers at the foot of the arches of the roof were not of sufficient strength—that was its weak place.

Examined by Mr. Cobbett.—Am a builder, and practice in Stockport; have done so for five and twenty years,—including my apprenticeship. Do not believe with Mr. Wilson, that the wall would have resisted the wind, if the roof had not pushed it down. The wall was 20 inches thick, and was without binders, of any good.

Other evidence having been heard, the jury retired; and, after an absence of three-quarters of an hour, returned the following verdict:—"Accidental death. The jury cannot separate without expressing, in the strongest terms, their entire disapprobation of the loose manner in which the specifications had been drawn up, and the building details carried out by the contractor."

WHY NOT ENGLISH?

AMONGST the extraordinary changes which have taken place during the last half-century, it will be noted that education has been advanced amongst the masses more than formerly; and the practice of reading amongst the industrious and working classes has increased greatly. While this improvement has been going forward, it is observable that amongst the same classes the taste for the cultivation of the dead languages is but little encouraged, and thus many, who read the newspapers and other popular sources of information, where professional Latin and other terms are extensively used, are puzzled.

For instance, the useful reports of the medical officer of health are quite unintelligible to thousands who understand diseases by their English names, who know what consumption is, but not phthisis. A surgery or apothecary's shop presents mysteries which not ten persons in a hundred can fathom. In botany, chemistry, and some sciences, several of those who would study them for the purpose of adding to their general stock of useful information, are beset with the learned terms which might be simplified with advantage to the present generation. On the tombs even of popular personages, it has been the custom to place Latin inscriptions.

The use of the English language is spreading in all directions: might it not be worth while to endeavour to simplify and render more suitable to the living and succeeding generations the learned terms of science? INQUIRER.

BUILDING STONE.

SIR,—The paper of Mr. Burnell, in your last number, on the varieties of stone used in architecture, especially in this metropolis, treats of a matter the importance of which can scarcely be exaggerated, but which requires to be elucidated in a still more searching manner than it would seem, from the portion of Mr. Burnell's paper already printed by you, that gentleman is inclined to employ. The fact of course is, that ornamental architecture is utterly thrown away, with all its cost, when employed upon a material which crumbles away, or peels off, after a few years' exposure to the atmosphere. The superficial durability of the stone employed in any building, but, above all, in one which is designed to be admired, is, or ought to be, the very first consideration with all the parties concerned in the erection of a stone building, whether those who pay or those who are paid for the work. Far better were it to condemn the use of stone altogether, and employ brick coated with plaster or cement, to receive a coat of paint every five or six years, than (as happened to Buckingham Palace, for example) employ stone of so untrustworthy a character as to make it necessary within a few years to resort to plaster and paint to heal its sores and hide its superficial decay.

Should you, as you propose, introduce some comments upon Mr. Burnell's lecture, after completely putting it before your readers, they would, I feel sure, be obliged by your affording some information as to who is responsible for the selection of the stone that has so egregiously failed in the new front of Buckingham Palace and the Houses of Parliament. Why was it supposed necessary to resort to the experimental use, in these important and costly buildings, of a kind of stone which had never been tried in the atmosphere of London before? and that when so many examples are to be met with of the almost perfect resistance to the influence of that atmosphere of the varieties of stone which our forefathers successfully (and as the event has shown), wisely employed: I mean the Portland and Bath oolites. How admirably preserved is the Portland stone of St. Paul's and of Greenwich Hospital! We have indeed "gone farther to fare worse," in going to Yorkshire for a novelty in London building materials. As for the Bath oolite, let any one examine either the highly-chiselled decorations, or the plain superficies of the numerous beautiful Mediæval churches and towers of Somersetshire or Wiltshire, and he will find that from three to six centuries have had scarcely any perceptible effect upon their surfaces. I believe the mistake has arisen from consulting chemists and geologists instead of experience. We cannot remedy the errors already committed; but we shall do wisely not to repeat them in our future metropolitan buildings of any pretension to architectural character, but to employ those qualities of stone only which have stood the test of ages, instead of listening to the opinions of closet experimentalists, however scientific. RUSTICUS.

RIFLE BUTT.

I BEG to send a suggestion for what I consider a good, cheap, and lasting rifle butt, easily made, and, when damaged, easily repaired.

The framing is made by fixing into the ground unpeeled larch poles, 30 feet high and 5 feet apart: to them fix ties and braces. The face of the butt is made by driving stakes, 8 feet long, 6 inches diameter, into the grounnd, to form a base, facing and binding them well together with hazel limbs (not less than 3 inches diameter), similar to wattling; then fill and pun with clay and dry rubbish up to the top of the stakes. Proceed with the second step in a similar manner, taking care that the lower ends of the second tier of stakes are well bound to the first tier.

In a country where rough timber is cheap, the cost of this butt, 50 feet long, 30 feet high, would be 160*l.*; but, if the volunteers themselves formed working parties some few evenings during the summer, and worked at the punning and filling, &c., only employing a *good hedge carpenter* to fix the frame and wattling, the cost would be but trifling. RIFLEMAN.

THE "BUILDER'S" LAW NOTES.

Statute of Limitations.—Two persons, partners, became jointly indebted, in 1850, to a third person. The partnership was dissolved in 1853. An action was brought in 1859 for the debt, and it was proved that an acknowledgment in writing took place in 1856, before the Statute of Limitations operated. It was held, however, that, as this acknowledgment was only made by one of the two debtors whose partnership had ceased, it was not such an acknowledgment as kept the debt alive, which was accordingly declared, by Vice-Chancellor Kindersley, to be barred by the Statute of Limitations.—*Re Hindmarsh.*

Lands Clauses Consolidation Act.—Certain lands in Berkshire were purchased by the Great Western Railway Company; and, at the time of the purchase-money being paid into court, the "uses" of (or legal rights connected with) the land were not the same as they subsequently became. The tenant for life petitioned that the money in court should be invested by the company in accordance with such new rights, and that the company should pay the expense of such investment. Vice-Chancellor Kindersley made an order that the money should be paid out of court for the purpose of being invested, and that the company should pay the costs of the application; but he refused to compel the company to pay the expenses of investment.—*Re De Beauvoir's Trusts.*

The Winding-up Acts.—A person held a debenture-note of the Royal Bank of Australia, payable in February, 1850. A winding-up order against that bank was made in the July of that year. The debts were all paid before 1857, and a dividend was made amongst the contributories. The present claimant only came forward with his claim in 1859. It was held by Vice-Chancellor Stuart that he was barred by the Statute of Limitations, as well as by other causes. The Winding-up Acts do not consider the official manager to be precisely in the same position as an official assignee in bankruptcy. The latter is a trustee in the complete sense of the word; and, notwithstanding lapse of time, he must pay as long as there are assets.—*Re Forrest.*

Partnership-Debt.—Two persons carried on business in partnership. One drew out of the partnership cash 2,000*l.* more than the other partner. It was held by Vice-Chancellor Wood that, though this became a debt, yet, in the absence of any agreement, it did not bear interest.—*Rhodes* v. *Rhodes.*

Seizure of Goods.—It has been held by the Court of Exchequer that the County Court Act does not authorize a bailiff under a County Court warrant to distrain and sell the goods of a stranger which are on the premises of defendant.—*Foulget* v. *Taylor.*

Books Received.

Some Account of the Condition of the Fabric of Llandaff Cathedral, chiefly from 1575 *to the present time.* By the Bishop of LLANDAFF. London: Rivingtons. 1860.

IN this, which is a second edition of an account of the cathedral previously published, will be found twelve illustrative plates, showing as well the beauty of the old parts as the absurdity of the design for restoring it in 1736. In earlier volumes of the *Builder*, at the time when an architect was connected with the restorations at Llandaff, whose name, oddly enough, is not once mentioned in the book before us, full particulars of the history and condition of the fabric will be found,* so that we need not now go into it.

The great object the bishop has in view in the publication of this book is to invite the assistance of the friends of the church in providing an organ, which Llandaff Cathedral has not had for the last 170 years, and which the members of the chapter, it appears, have no means of purchasing for themselves.

It is certainly a reproach that any cathedral should be in such a condition; and, as the bishop and chapter have been doing their best, almost, it may be said, to rebuild their cathedral, it may confidently be hoped that when their case is known an organ of proper character will be provided.

One thousand pounds would do what is requisite, and this might easily be raised if a few friends would take the matter up.

Miscellanea.

ENGLISH ENGINEERS AT CONSTANTINOPLE.—A general strike has taken place amongst the English engineers employed at the Arsenal, and those recently arrived for the service of the new steam corvettes and gunboats. The former, it is said, have consented temporarily to resume work, on the understanding that the grievances they complain of—irregularity and delay in payment of their wages—shall receive the immediate attention of the authorities.

BATHS AND LAUNDRIES IN MANCHESTER AND SALFORD.—The annual meeting of the Manchester and Salford Baths and Laundries Company was held at the Town-hall, on Wednesday morning. Alderman Neild presided. There are two establishments in connection with the company, one at Greengate and one at Mayfield. On comparison with 1858, the past year showed an increase of 36,432 bathers, and 547 washers. There was an increase in the expenditure, which was partly owing to the repairs necessary in the swimming-bath, and partly to the increase of business. The net profit for the year had been — at Greengate, 233*l.* 9s. 9d; at Mayfield, 432*l.* 19s. 11½d.; making a total of 666*l.* 9s. 8½d., being an increase over the previous year of 280*l.* 9s. 6½d. To this was added a small amount carried over from last year, which left a disposable balance of 702*l.* 12s. 3d., from which the directors recommended that a dividend of 3 per cent. on the year be declared to the original shareholders.

A NEW CLASS OF OLD IRISH MONUMENTS.—At a recent meeting of the Royal Irish Academy, the Rev. Charles Greaves, D.D., made a statement "on a hitherto undescribed class of ancient Irish monuments," some of which had first attracted his attention while on a tour in Kerry, examining oghams. The first he saw consisted of a portion of rock, denuded from a bog. It was found to be covered with circles and dots. He afterwards saw others in various places. Describing them generally, he says,—"I thought that possibly they might have something to do with what is called the spectacle ornaments found upon Pictish stones, but here there were but two of these circles. Those I have been speaking of were arranged systematically, so as to form a symmetrical ornament. I at last saw the figures had certain geometrical relations; that is to say, that the circles or dots upon them tended to arrange themselves into groups of three in a straight line. At once the perception of this led me to the conclusion that these figures must represent some circular objects geometrically related to one another in their positions; and I could not forget that in Pettie's Essay on Tara, there is a map of the monuments at Tara, similar to these figures. Thus I came to the conclusion that these inscriptions must have been intended to represent groups of what we call forts; that is, the circular earthen structures of our ancestors in this country."

* See vol. vi. pp. 162 and 211, and afterwards.

FREE LIBRARY AT BALMORAL.—A library of 400 volumes, the gift of her Majesty and the Prince Consort, for the benefit of the tenants on the estates of Balmoral, Abergeldie, and Birkhall, has just been opened.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The second meeting in the Lent term of this society, was held in the Philosophical Society's Rooms, on the 23rd ult., the Rev. H. R. Luard, in the chair, when the Rev. G. Williams, of King's College, read a paper on "Roman Basilicas." Mr. Williams traced back the history of the Basilica to the original Stoa Basileios at Athens, which derived its name from the Archon Basileius, as being the court where he administered justice. The first he remarked was introduced to Rome by the celebrated Marcus Porcius Cato (B.C. 210), from whom the Basilica then erected was named Porcia.

BRAY'S TRACTION ENGINE.—The company who purchased Mr. Bray's invention, have forwarded to us a printed report of their first general meeting, with a request that we will aid in correcting an *ex parte* law statement to the prejudice of their engine, which has been largely quoted by our contemporaries. As we refrained from even alluding to the obviously fancy sketch of the special pleader referred to, we have the less occasion to enlarge on this subject; but we may state that the chairman explained at the meeting that "three hundred gallons of water were requisite to work the engine and tender; but Mr. Myers made no provision for keeping up the supply, depending mainly upon the water he found in the ditches and ponds on the road-side. That source, as might have been expected, failed, the summer being unusually dry, and the water, when obtained, was frequently dirty and unfit for use, so that both boiler and cylinders were much damaged, the tubes burnt, and the safety-plug, which was filled in with lead to prevent explosion, was burnt away no less than five times during the journey. But the object of the plaintiff was to evade the claim of the company against him for thus damaging the engine, by setting up a counter claim, as was obvious from a letter on the subject, in which he said he was afraid he should have to 'advertise' the engine as a perfect failure." The principle of the wheel of Bray's engine, we may here note, is to put forth the claw, to gain the traction; and that being done, the claw is withdrawn by the eccentric, and a flat surface presented, which acts upon the road like a heavy roller. The printed report contains documents, from which it appears that Bray's engine has given satisfaction to the Woolwich dockyard authorities, and to Messrs. Maudslay, Penn, and others.

THE NEWSPAPER STAMP.—Mr. John Gray, a proprietor of the *North British Advertiser*, makes the following practical and excellent suggestions. "Firstly, to accept the Chancellor's proposal, that all newspapers not exceeding four ounces in weight go by post if bearing the common penny stamp; and that all newspapers above four and not exceeding six ounces in weight may be conveyed by post if bearing a three-halfpenny stamp. But, secondly, that it shall be optional for every newspaper proprietor to be furnished with either or both penny and three-halfpenny adhesive stamps, bearing the name of his own paper, and to be sold to him only; said stamps to convey the paper only, the name of which it bears; it being at the same time rendered illegal, and punishable with fine or imprisonment, for any person whatsoever, except himself and his own servants, to use, or to be found in possession of, one or more of these distinctive stamps in an unobliterated state. The general use of these stamps by any newspaper proprietor should not, however, preclude him from using the common penny and three-halfpenny stamp whenever chance or convenience might require him to do so. Under this law every newspaper proprietor would be enabled to protect himself against any loss of stamps by peculation. His stamps would be of value to himself only, precisely as is the distinctive stamp impressed upon his paper now. Temptation would not be presented to office boys or others to steal these stamps; and as they would be required in very large numbers at a time, the printing thereof would create no extra trouble or expense whatever, original type or engraving only excepted." A correspondent of Mr. Gray's paper also suggests what Mr. Gray regards as a good idea, in addition to his own, namely, that "should Government be unwilling to print the name of each newspaper on the stamps, a special newspaper stamp might be issued with a blank in the design, and this could be filled up by the proprietor of the paper printing its title at his own expense;" and that the same stamps might be sold conditionally to the public.

OUR FORTIFICATIONS.—The Fortification Commission have finished their labours, and sent in their report. The minister is sitting upon it, and what he will hatch we do not know.

WANTED, AN ASSISTANT!—With reference to the notice in our last, of the experience of an assistant under the above heading, we have received several letters complaining of ill treatment under similar circumstances.

NEW WESTMINSTER BRIDGE OPENED.—On Thursday, the 1st, the completed half of the proposed new bridge, already fully described in these pages, was quietly opened to the public by the Chief Commissioner of Her Majesty's Works, Mr. Cowper, and the engineer walking over it, and then admitting the crowd who had gathered to look at them.

SALE OF THE MILTON CLUB HOUSE.—Messrs. Norton, Hoggart, & Trist, have sold by public auction, at the Mart, the freehold property known as the Milton Club-house, No. 14, Ludgate-hill, with a public-house and two dwelling-houses and shops, in St. Martin's-court, having a frontage of 30 feet to Ludgate-hill, a depth of 108 feet to Little Bridge-street, and occupying an area of about 7,500 square yards. The houses in the rear let at rents amounting to 175*l.* per annum. The property sold, subject to yearly rent charges amounting to 700*l.*, for 8,900*l.*

BERKELEY HOUSE FOR THE BOARD OF WORKS.—In reply to Mr. E. James, in the House of Commons, as to the sum paid by the Metropolitan Board of Works for the site of Berkeley House, upon which the board is erecting a building for their own use, and what sum was to be expended by the said board in the construction of such building, Mr. Cowper said that the Metropolitan Board of Works had given 500*l.* for the site, and 799*l.* for the old materials. They had a lease of the ground for ninety-nine years, at 5,000*l.* a-year for the first ten years, and 350*l.* for the remainder of the term; and the amount to be spent in the whole on the construction of the building, including all extras, would be 16,000*l.*

STRIKE AMONGST THE MASONS FOR NINE HOURS.—Just when the neighbourhood of Huddersfield promises most work a difficulty has arisen between the masters and men. The operatives gave notice six months ago. The notice expired on the 1st of March, and they, sending a second notice to their employers to say they adhered to their purpose, all struck work on that day. The masters met the men by declaring their determination to resist the movement. Yesterday, however, the masters (eighteen in number) issued an announcement that they would give 4s. 6d. a day instead of 4s. The men have not, however, as yet accepted the offer, and thus we are threatened in Huddersfield with a repetition of the disaster which has so injured the metropolis, harming all concerned, paralysing labour, and crippling capital.—*Leeds Mercury.*

THE PRINCE CONSORT AT THE ROYAL EXCHANGE.—On January the 3rd, the Prince Consort inspected the fresco decorations in the Royal Exchange, and was met at the entrance to the building by the Lord Mayor and others, members of the committee. Mr. Tite, M.P., the architect of the building, and Mr. Sang, who has executed the late decorations, were also in attendance. His Royal Highness spent about half an hour in examining the various designs. While his Royal Highness and suite were in the quadrangle of the Exchange, Mr. W. G. Rogers, the carver, invited the Prince, in the name of the churchwardens, to inspect the redecorations of St. Michael's Church, Cornhill, which have been lately carried on by Messrs. G. G. Scott and H. Williams. The invitation was accepted, and the Prince went over St. Michael's, and duly examined the carvings there, of which we have already given a description.

THE LONDON DISTRICT TELEGRAPH.—The half-yearly meeting of the London District Telegraph Company has just been held. The report stated that of the first call of 1*l.* per share, 10,740*l.* had been paid, leaving only 160*l.* unpaid. The capital paid up amounted to 21,320*l.* The new lines completed during the past half-year comprise extensions to Kingsland, Mile-end, London Docks, Greenwich, Clapham, Camden Town, and Highbury. The length of the line completed consists of two miles under ground, and 10¾ miles over house; lines contracted for in progress, but not completed, under ground, ¼ mile; over house, 20 miles. In progress by the engineer, 11¼ miles over house, making, with 22¼ miles previously completed, 67¼ miles. The report was adopted, and the directors were authorized to extend the wires of the company beyond the radius of four miles from Charing Cross, and within a radius of 12 miles, for fire and police purposes only.

ENGLISH PAPER-HANGINGS.—A deputation of paper-hanging manufacturers, consisting of Messrs. Heywood, Thos. Cooper, H. G. Ashton, R. Waterson, Ridley, Whitley, D. Graham, W. Haselden, W. Woollams, W. Cooper, Joseph Albright, Wm. Snape, James Solomans, Henry Lighbourn, John Lindsay, and S. M. Hubert, accompanied by Sir J. Duke, had an interview with the Chancellor of the Exchequer last week.

THE BRITISH MUSEUM.—In reply to a question by Mr. Joseph Locke, in the Commons, as to whether the Natural History Collection is to be removed from the British Museum, and if so to what place, Lord Palmerston replied that although the trustees had decided to remove the Natural History Collection, and retain the library and other departments, no decision had been come to as to the particular place to which the removal should be made; but that Government would consider the matter a little farther before anything was done.

CLEANSING THE SERPENTINE.—The contract for engine-house and other buildings, groundwork, and sculpture, required to carry out Mr. Hawkesley's plan for cleansing the Serpentine, has been entrusted, according to a return just published, to Messrs. J. & E. Bird, of Hammersmith. The tenders were called for on 9th November, and five were sent in. Messrs. Bird's was the lowest, the amount being 13,023*l.* The works were commenced on the 28th December last, and are to be completed on 1st May, 1860. Messrs. James Watt & Co. have the contract for the engine and machinery. Meantime, Mr. Cowper, the Chief Commissioner of Works, has procured, in the Commons, the nomination of the following select committee on the Serpentine:—Mr. Cowper, Lord J. Manners, Sir J. Shelley, Mr. Blackburn, Sir M. Peto, Mr. Joseph Locke, Mr. Walter, Sir J. Paxton, Lord Fermoy, Mr. Byng, Mr. A. Egerton, Capt. Archdall, Sir F. Smith, Mr. Beach, and Sir M. W. Ridley. Power to send for persons, papers, and records; five to be the quorum. The decision will, we hope, be revoked.

A STREET GRIEVANCE: DONKEY TRAPS!—I venture to ask the influence of your journal in behalf of the poor hardworked costermongers' donkeys, whose feet so frequently get caught in the iron traps of the water-mains. Why should the water companies have iron-framed holes in the pavement of the streets, dangerously placed at almost every corner of the chief thoroughfares, whereby the most excruciating suffering is inflicted on poor animals whose burthen needs no addition? The holes, too, seem made expressly to catch a donkey's hoof without admitting its withdrawal, and the check thus given to the progress of the poor victim is sufficient to cause, if not a broken leg, a sprain that will take some time to cure. There are covers for cellars, and for every other thing which interferes with the traffic: why not, then, *covers* for the street water-cocks? The expense, surely, can have nothing to do with it. I saw a case to-day, where, in addition to the strain already enduredy, the farrier was wrenching off the shoe from a poor donkey whose struggles were most piteous. I trust such cruelty will no longer be permitted, and that the *Builder* will urge the necessity of an immediate remedy. It is time a little science, or common sense, was brought to bear on the ironwork of our street water-cocks, if only for the prevention of cruelty.—J. B.

COMPENSATION IN PARIS.—Juries are constantly engaged just now in settling the amount of compensation to be paid to owners and tenants of houses required for the improvement of the streets of Paris. The late proprietor of the Café de Foy, in the Palais Royal, when driven thence, had taken refuge in the Rue Batte. According to the *Morning Star*, M. Foy (as he is called) had amongst his customers many of the leading artists of the day, to whom he had been useful, and they set about rendering his new abode attractive, and installed him in a magnificent Louis Quinze salon—a Swiss chalet smoking-room, and a Chinese summer-house, all beautifully executed by Horace Vernet, Paul Delaroche, and others. When the city of Paris, therefore, came to bid M. Foy and his attractive museum adieu,—a sort of rival Luxembourg, in which he had been distributing his coffee and gloria,—M. Foy refused, naturally, to do so, without a most powerful consideration. The case was referred to the tribunals. The city of Paris offered M. Foy an indemnity of 300,000f. Maitre Freslon, the advocate employed by M. Foy, insisted upon no less than 700,000f., not, as he observed, for the physical importance of the place, but for the moral and intellectual value of the thing. With such an argument as this what course could possibly be pursued? The 700,000f. were accorded.

ARTISTIC COPYRIGHT. — The Council of the Society of Arts propose to bring the Amendment of the Law of Artistic Copyright before the Legislature, at the earliest possible moment. The original committee has been revived, and has held a meeting to re-affirm the principles on which they desire the amendment to proceed.

A UNION FOR PURCHASE OF BOOKS.—A correspondent, "C. E." referring to the fact, that in consequence of the cost of architectural and engineering works, many of the junior members of the profession are debarred from obtaining a suitable library, suggests that an association be formed on the principal of "Art Unions," for the purchase of architectural and engineering publications, each subscriber of 10s. to have one chance of a prize. The holders of prize tickets to select the works, subject to the approval of the committee.

SAND IN LIEU OF STRAW FOR HORSES' BEDS.—Mr. Small, a veterinary surgeon of considerable experience and successful practice in Ulster, states that in the present scarcity of straw he uses sand for horses' beds in his repository, and further observes that sand is superior to straw, inasmuch as the former article does not retain heat, and also serves horses' hoofs. Mr. Small's alleged successful experiment deserves extended circulation, now that the market price of straw is so high. We should be glad to know the opinion of our local veterinary surgeons on this discovery.—*Kilkenny Moderator.*

MEMORIAL OF MRS. HEMANS.—It is proposed to erect a stained-glass window in the chancel of the parish church of St. Anne, Dublin, to the memory of the celebrated poetess, Felicia Hemans, whose remains were there buried. The window will represent the leading female characters of the Old and New Testament History, selected with regard to Mrs. Hemans's series of admirable sonnets on that subject, and with the view of illustrating her own writings and character. The execution of the window will be intrusted to first-rate artists. The probable cost will be 250*l.*; and of this sum 40*l.* have been already promised by a few friends. Subscriptions will be received (among others) by Mrs. S. C. Hall, 27, Ashley-place, Victoria-street, Belgravia. There is also a Dublin committee; and at Edinburgh Messrs. Blackwood & Son, the publishers, will receive subscriptions.

THE ROYAL SOCIETY.—The President of the Royal Society gave his first *soirée* for the season on Saturday last, at Burlington House. All the rooms were thrown open, and an unusually large collection of interesting objects in science and art was exhibited. Among there were the extremely beautiful machine for weaving by electricity, invented by Mr. Bonelli; Mr. H. Bradbury's engraving machines, which were exhibited in action; specimens of the newly-invented process of photo-zincography, by Colonel James, director of the Ordnance survey; models of Mr. Whitworth's guns, and specimens of the actual shot used, explained by Mr. Whitworth; a very interesting series of portraits and relics of Dr. Priestley, including two of his electrical machines; Trevithick's original locomotive engine, exhibited by Mr. Woodcroft; curiosities from Japan, exhibited by Captain Osborn and Dr. M'Gowan; model of an iron fortress, exhibited by Mr. Hall; and a series of experiments, showing electric discharges *in vacuo* by the voltaic battery, by Mr. Gassiot. The Prince Consort was present.

ACCIDENTS.—A scaffolding has fallen at Oxford-street, Eccleshall-road, Sheffield, at some houses which are being built by Mr. George Seville. The walls were raised to the height of about 24 feet, and the men were going on with their work as usual, when the fastening, connecting two lengths of planks to one of the poles, gave way, precipitating five men, who were standing on them, to the ground. Two of the men, Mr. Seville and a labourer, received no injury beyond a mere shaking. ——During the late tremendous storm of wind much damage has been done in various parts of the country, as well as in the metropolis. At Derby, when the storm seemed at its height, the spire of St. Alkmund's church, including the vane and many feet of solid masonry, was blown down, and, crashing through the church below, caused great injury, which will take a considerable sum of money to repair. One of the pinnacles of the Roman Catholic church tower was also injured in a similar manner.——At Nottingham considerable damage was done to the church of the Holy Trinity, portions of which were torn away, and for some time fears were entertained that the spire would be blown down. A pinnacle of St. Stephen's church, Sneiton, near Nottingham, was blown on to the roof, damaging the latter. The roof was torn from St. Anne's chapel-of-ease, Nottingham.

DISCOVERIES IN EGYPT.—Lord Dufferin has been excavating on the banks of the Nile, and we understand that a small temple, with the columns *in situ*, and a considerable number of inscriptions, have rewarded the search.

A MUSEUM FOR EAST LONDON.—A deputation attended the Chief Commissioner of her Majesty's Works, the Right Hon. W. Cowper, last week, to present a memorial, setting forth the necessity for a public museum and library which should be accessible to the inhabitants of the eastern and south-eastern districts of the metropolis, and soliciting the aid of Government to facilitate the attainment of the objects desired.

FOUNDATIONS OF BUILDINGS ON FIRE.—For several days the singular circumstance was presented of the foundations of a packing-house, &c., at the manufactory of Messrs. Boote, in Waterloo-road, Burslem, being on fire. It seems, says the *Staffordshire Advertiser*, that the building rests on a foundation of rubbish, in which there is an admixture of a kind of cannel coal, and this, there is reason to believe, had taken fire from a flue in the saggar house, which is on a very low level. By means of the fire-plug hose a large quantity of water was turned into the foundations, and the fire appears to be now subdued; but it seems to have extended to the foundations of the adjoining residence, and so injured a pile of building at the rear that it has been deemed requisite to support it with planks. The walls of the packing-house, &c., are also cracked.

TENDERS

For the erection and completion of three mortuary chapels, two lodges, entrance gates, iron railing, boundary fences, &c., at Over Darwen, near Blackburn. Mr. J. Stevens, architect, Manchester. Quantities supplied by the architect:—

Kay, Darwen	£3,310 0 0
Brown, Stockport	3,300 0 0
Howarth & Son, Blackburn	3,270 0 0
Knowles, Darwen (accepted)	3,220 0 0

For building ten houses, for the London and Suburban Mutual Benefit Building Society. Messrs. Hammack & Lambert, architects. Quantities supplied:—

Jones	£3,619 14 2 !
Furnival	3,200 0 0
Heath	2,925 0 0
Perry	2,870 0 0
Ennor	2,867 0 0
Hedges	2,865 0 0
Tolley	2,857 0 0
Derby	2,179 0 0
Scott, Bow	2,170 0 0 !

For alterations and additions to the Manor-house, Caterham, Surrey, for Mr. Parbury. Mr. Hahn, architect. Quantities supplied by Mr. R. Roberts:—

Browne & Robinson	£3,247 0 0
Piper & Sons	3,190 0 0
King & Burton	3,155 0 0
Perry	2,746 0 0
Rider	2,390 0 0
For Stables, &c.	
Rider	839 0 0
Piper & Sons	760 0 0
Browne & Robinson	757 0 0
Pollard	655 0 0
King & Burton	650 0 0
Perry	596 0 0

For new Catholic church, Brentwood, Essex. Mr. G. R. Blount, architect. Quantities supplied:—

White, Romford	£2,941 7 8
Roper, Chelmsford	2,759 11 4
Wood, London	2,745 0 0
Bird, London	2,694 0 0
Patman & Fotheringham	2,569 0 0

For new chapel and vestries, Ledborough-road, Brixton, for the Rev. D. A. Herschel. Mr. W. G. Habershon, architect. Quantities supplied:—

Green	£2,990 0 0
Conder	2,399 0 0
Patman & Fotheringham	2,395 0 0
M'Lennan	2,335 0 0
Simpson	2,265 0 0
Evans	2,250 0 0
Tarrant	2,100 0 0
Seagrave & Blomfield	1,990 0 0

For new printing-offices, Fountain-court, Shoe-lane, for Mr. Thomas Harrild. Messrs. Arding and Bond, architects. Quantities supplied:—

Patman & Fotheringham	£2,449 0 0
Brown & Robinson	2,419 0 0
Brass	2,281 0 0
Axford & Co.	2,223 0 0

For house at Windsor, for Rev. Mr. Hawtrey. Mr. Street, architect:—

Lawrence	£2,641 10 0
Holden	2,384 0 0
Hardy & Son	2,360 0 0
Silver	2,300 0 0
Snowball	2,200 0 0
Hollis	2,160 0 0

For rebuilding No. 14, Minories. Messrs. Smith & Williams, architects:—

Patman & Fotheringham	£1,570 0 0
Little	1,514 0 0
Willson	1,434 0 0

For new rectory-house and offices, North Scarle, Notts. Mr. Goddard, architect:—

Semper, Scarle	£1,010 0 0
Wallis & Son, Rasen	1,007 0 0
Crosby, Coleby	960 0 0
Reeve, Lincoln	928 0 0
Clipsham, Norwell	848 0 0

For the erection of house, No. 27, Aldgate, for Mr. James Brown:—

Ashby & Horner	£1,238 0 0
Ashby & Sons	1,150 0 0
King	1,138 0 0
Thompson	1,135 0 0

For parsonage-house, Sutton Cheney, Leicestershire. Mr. Edward Browning, architect, Stamford:—

	Whole amount.	Deduct, if Cellarage omitted.
Lawson & Joy	£1,449 10 0	£61 13 0
Neal & Hextall	1,208 0 0	43 0 0
Sketchley & Co.	1,150 0 0	45 0 0
Broadbent	1,138 10 0	49 10 0
Harrold	1,096 6 0	38 6 0
Gutteridge	1,064 10 0	36 16 0
Cogswell & Day	1,055 6 0	60 0 0
Hardy	1,048 0 0	38 0 0
Osborne	1,028 0 0	32 0 0
Spencer	994 0 0	35 0 0

For alterations to No. 59, Crown-street, Finsbury. Mr. Charles Laws, architect:—

Brown & Robinson	£928 0 0
Piper	890 0 0
Patman & Fotheringham (accd.)	775 0 0
Foxley	649 0 0

For alterations to a shop-front, for Mr. Jesse Jones, No. 278, Pentonville-road. Mr. R. J. Brede, architect:—

Williams	£160 0 0
Batchelor	135 0 0
Barnes	121 6 0
Webber	118 0 0

For alterations to the Phœnix Tavern, Smith-street, King's-road, Chelsea. Messrs. Finch Hill & Paraire, architects:—

	Total.	Separate Estimate.
Mills	£520 0 0	£60 0 0
Purkis	486 0 0	65 0 0
Turner & Sons	411 0 0	66 0 0
Jeffs, Brothers	402 0 0	69 10 0
Hodges	377 0 0	30 0 0

TO CORRESPONDENTS.

P. S.—C. R.—F. R. W.—R. T. R.—A Rifleman (if danger can be proved, the practice can be stopped).—H. B. (will you send us plan of cottages built for the sum named?).—H. C.—G. B. M.—W. H. W.—J. M. (we are unable to comply).—A Clerk.—J. N. P.—W. and R.—J. P. J.—F. P.—W. W. R.—J. W.—J. B. N.—N. V. & Co.—J. C. A.—M. M.—G. P.—"A Workman."—Ema.—A. J. H. (next week).

☞ *NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and* NOT *to the "Publisher."*

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

MR. WILLIAM ELLISON,
CONSULTING SURVEYOR, late of STAINSBY-ROAD,
Has taken Offices at
13, FENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C.
Where he continues to advise BUILDERS
On BREACHES of CONTRACT, DISPUTED ACCOUNTS, &c.

SWANSEA UNION. — CLERK of the WORKS WANTED.—The Guardians of the above Union hereby give Notice that they will, at the Weekly Meeting of their Board, on THURSDAY, the 22nd MARCH instant, at ELEVEN o'clock in the forenoon, proceed to the APPOINTMENT of a CLERK of the WORKS, to superintend the Building of a New Union Workhouse at Swansea. Salary two guineas per week. Duties to commence immediately.—Applications and testimonials to be sent to the Clerk to the Guardians, on or before WEDNESDAY, the 21st instant.—By order,
CHARLES COLLINS, Clerk to the Guardians.
5, Fisher-street, Swansea, 1st March, 1860.

THE TOWN of BURTON-UPON-TRENT ACT, 1853.—TOWN SURVEYOR WANTED.—The Commissioners under the above Act will, at their monthly meeting, to be held at their Offices, No. 53, High-street, Burton-upon-Trent, on WEDNESDAY, the 4th day of APRIL, 1860, at HALF-PAST TEN o'clock in the forenoon, proceed to the appointment of a TOWN SURVEYOR, who will also be required to undertake the Office of Inspector of Nuisances, Lodging-houses, and Slaughter-houses, and Superintendence of the Fire Brigade and Scavengering department. Salary, 150*l.* per annum. The person elected to devote the whole of his time to the services of the town. The Surveyor must be competent to prepare plans of new works, and additions to, or alterations of, existing works, for the effectual drainage of all houses, buildings, and other property within the district, and to perform all the duties required by the Towns Improvement Clauses Act, 1847, and to take charge of the formation of new streets, and of repairing, cleansing, and watering, all the streets, roads, and highways, and of cleansing and repairing all sewers and drains within the said district. Also of carrying out, as by law required, the Inspection of Nuisances, Lodging-houses, and Slaughter-houses, Superintendence of the Fire Brigade, and all such orders and regulations as shall from time to time, by the said Commissioners or their successors in office, be found necessary to be made for carrying out the provisions of the said Act, and of the several Acts incorporated therewith.—Applications in writing, accompanied by recent testimonials of character and competency, to be forwarded to me, endorsed "Application for the Office of Town Surveyor," on or before THURSDAY, the 29th day of MARCH instant. Canvassing the Commissioners will be deemed a disqualification.—By order of the Commissioners,
WM. COXON, Clerk to the Commissioners.
Commissioners' Offices, 53, High-street, Burton-on-Trent, March 3, 1860.

A GENTLEMAN, residing within ten miles of London, Land Agent to a nobleman having considerable property in two of the southern counties, has a VACANCY for a PUPIL.—Address, R. care of Messrs. WATT, 63, High Holborn, W.C.